AUGUST | 1957

products finishing

FINISHES ON METAL PRODUCTS

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Today's builder's hardware is designed and manufactured to appeal to the modern family's taste — functional but with a subtle touch of high style. The Schlage Lock Company has always been a leader in the production of locks and hardware that are as modern as tomorrow.

Finishes too can be modern combining elegance and smartness. And, today's most stylish, most practical and most modern finish is a SATIN FINISH . . . a Lea Satin Finish. These and many other SCHLAGE LOCKS are Lea Satin Finished.

Why not write us today for more information on this modern, rich looking, economical method for quality satin finishing your products.

Smart lock fashions by SCHLAGE...

Satin finished with LEA COMPOUND

Burring, Buffing, Polishing, Lapping, Plating and Spray Finishing . . . Manufacturers and Specialists in the Development of Production Methods, Equipment and Compositions. Manufacturers of Lea Compound and Learok . . . Industry's quality buffing and polishing compounds for over 30 years.

The Hallmark of Quality Products

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12	28	44	60	76	92	108	124	140	156	312	325	341	357	373	389	405	421	437	453
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14	30	46	62	78	94	110	126	142	158	314	327	343	359	375	391	407	423	439	455
15	31	47	63	79	95	111	127	143	159	315	328	344	360	376	392	408	424	440	456
16	32	48	64	80	96	112	128	144	160	316	329	345	361	377	393	409	425	441	457

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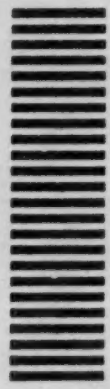

Your Monthly Source For Finishing Ideas

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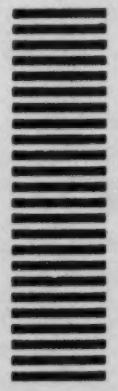

DO YOU NEED ANSWERS TO THESE QUESTIONS?

1. How can I electroclean steel at lower cost?
2. How can I find a brass cleaner that gives better protection against tarnishing?
3. How can I reduce rejects due to faulty electrocleaning of zinc die castings?

***Answer* 1** Following an Oakite recommendation, one plater made a small change in his steel-cleaning cycle and soon had two tankfuls of cleaning solution doing the work of three—and the plate adhesion was improved. *See booklet offered below.*

***Answer* 2** Oakite has a new brass cleaner that provides scientific protection against the oxygen that tarnishes brass and other copper alloys during the application of reverse current. *See booklet offered below.*

***Answer* 3** Oakite has an anodic conditioner that offers brighter plating of zinc die castings . . . with no anodic blackening and fewer rejects. *See booklet offered below.*

FREE For more information about the electrocleaning of steel, brass or zinc die castings, send for one or all of the booklets listed in the coupon.

OAKITE PRODUCTS, INC.
20 Rector Street, New York 6, N. Y.

Send me the free booklets I have checked below:

- ☐ "Four good steps toward better electroplating on steel"
- ☐ "What's NEW for electrocleaning brass and other copper alloys"
- ☐ "Good news about electrocleaning zinc-base die castings"

Name_____

Company_____

Address_____

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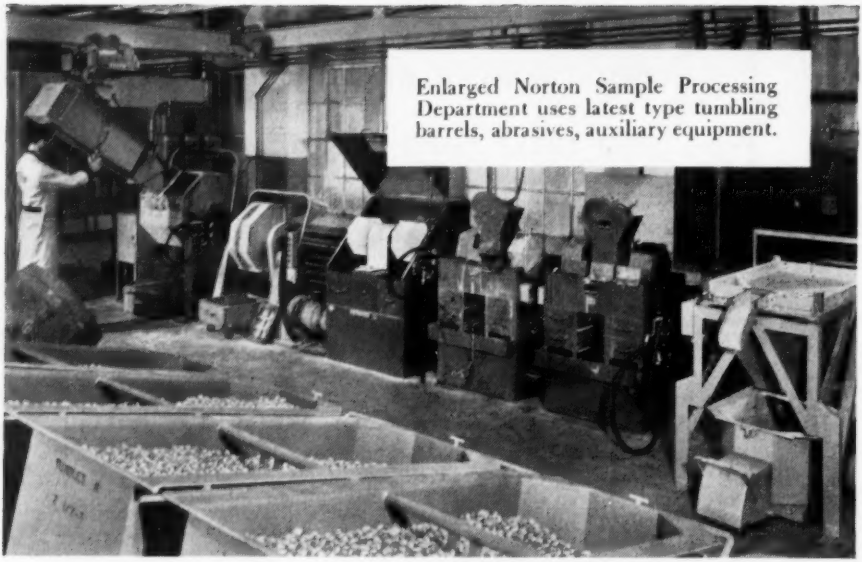

Enlarged Norton Sample Processing Department uses latest type tumbling barrels, abrasives, auxiliary equipment.

See what barrel-finishing can do

If you're still finishing metal parts the long hard way — take a look at what Norton is demonstrating with modern equipment, materials and processes in its newly enlarged Sample Processing Department.

Deburring . . . descaling . . . better color . . . better finish . . . lighter cuts on die castings without cutting under the smooth outside surface — what's your problem?

If you will send us sample parts (and they can range from tiny needles to hefty forgings) Norton production engineers will give you a detailed report on what tumbling will do for you.

What To Send Us

Along with your unfinished parts please forward: (a) a finished sample to be matched (hand-finished if necessary); plus (b) information on your present barrel finishing equipment, if any, including type and size of barrel and speeds. Address the Sales Engineering Dept., Abrasive Division. NORTON COMPANY, Worcester 6, Mass.

G-301

NORTON

ABRASIVES

Making better products . . .
to make your products better

NORTON COMPANY: Abrasives • Grinding Wheels • Grinding Machines • Refractories
BEHR-MANNING DIVISION: Coated Abrasives Sharpening Stones • Pressure-Sensitive Tapes

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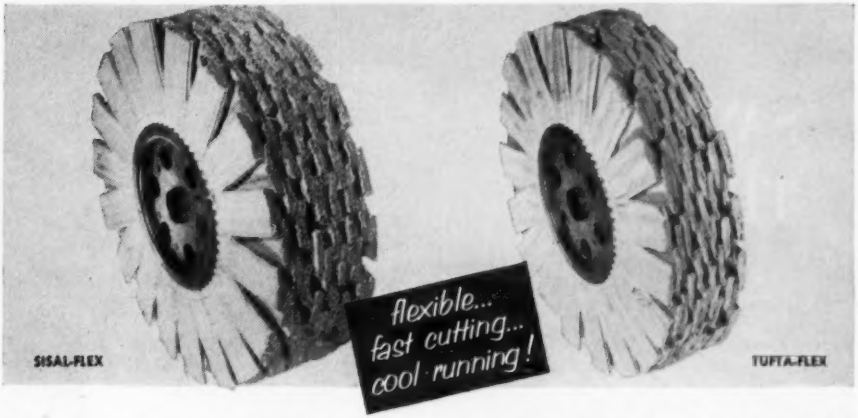
New---from H-VW-M

Sisal-Flex and Tufta-Flex Contour Buffs

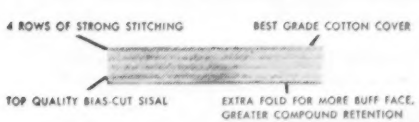


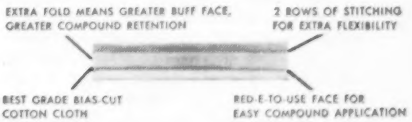
For fast, heavy-duty cutting on hard metal having contoured surfaces, choose flexible, strong, long-wearing new **SISAL-FLEX** Buffs! Overlapped **SISAL-FLEX** construction means cool running, no streaking, unusual pliancy. Check these features:

- **Best grade sisal is bias cut, then bound in top grade bias-cut cotton cloth . . . never frays, never scratches!**
- **Each buffing pad has *extra* fold . . . gives more buffing face, carries more compound on circumference and leading edges.**
- **Ventilated steel center, in 5", 7" and 9" dia. sizes. Note extra row of stitching around center.**
- ***Four rows of stitching*, for strength, longer wear.**
- **Also available with triple sewn buffing pads. Both types come in standard sizes from 12 to 18 inches in diameter.**

For fast, lighter cutting on contoured work where the final finish must be smoother, choose strong, unusually flexible, long-wearing new **TUFTA-FLEX** Buffs! Overlapped **TUFTA-FLEX** construction means no streaking, positive cutting, cool operation. Look for these special features:

- **Each buff pad made of strong 86/93 cotton—bias cut to prevent fraying, increase wear.**
- **Two rows of stitching—super flexible! Extra row of stitching around center.**
- **Double fold provides greater cutting face, extra compound-holding capacity.**
- **Ventilated steel center has rugged clamping teeth for safety.**
- **Available in standard sizes from 12 to 18 inches in diameter.**


4 ROWS OF STRONG STITCHING
BEST GRADE COTTON COVER
TOP QUALITY BIAS-CUT SISAL
EXTRA FOLD FOR MORE BUFF FACE, GREATER COMPOUND RETENTION


EXTRA FOLD MEANS GREATER BUFF FACE, GREATER COMPOUND RETENTION
2 ROWS OF STITCHING FOR EXTRA FLEXIBILITY
BEST GRADE BIAS-CUT COTTON CLOTH
RED-E-TO-USE FACE FOR EASY COMPOUND APPLICATION

Discover how new **SISAL-FLEX** and **TUFTA-FLEX** Buffs can mean *savings* in your buffing room! Write today for more information and prices. **Hanson-Van Winkle-Munning Company, Matawan, New Jersey. Offices in principal cities.**

H-VW-M

Industry's Workshop for the Finest in Plating, Anodizing, and Polishing Processes • Equipment • Supplies

PLATEMANSHIP – Your H-VW-M combination—of the most modern testing and development laboratory—of over 80 years experience in every phase of plating and polishing—of a complete equipment, process and supply line for every need.

For more data circle **306** on Reader Service Card

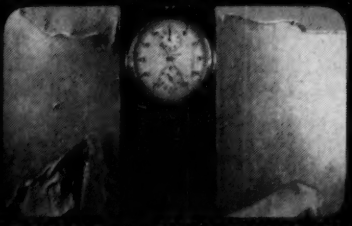
STRIPPING ENAMEL . . .

SAVING TIME

Enthonics AT WORK

IMMERSED . . . THE WATCH STARTS!

15 SECONDS . . . WRINKLING TAKES PLACE!



25 SECONDS . . . STRIPPING COMPLETED!

25 seconds from immersion to completed stripping!

That's the fast, dramatic story of ENTHONE Enamel Stripper S-18 in action — another example of *Enthonics* at work.

Enthone Enamel Stripper S-18 is the modern organic stripper developed for removing the newest organic finishes such as Epon or Epoxy coatings and many synthetic enamels from copper, copper alloys, steel and aluminum.

For the right strippers to solve your organic stripping problems fill out a questionnaire we'll send at your request; return it with typical samples of your work. Enthonics will find the answer . . . without obligation!

And ask for your copy of the "Enthone Check List" of literature covering more than 60 products and processes developed for modern electroplating and metal finishing.

ENTHONE INCORPORATED

442 Elm Street, New Haven 11, Connecticut

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products finishing

Vol. 21 No. 11 August, 1957

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Haveg Equipment Solves Corrosion Problems in Handling
ACIDS • ALKALIS • SOLVENTS • HF • FUMES

HAVEG PLASTICS OF TOMORROW
SOLVE YOUR CORROSION PROBLEMS TODAY

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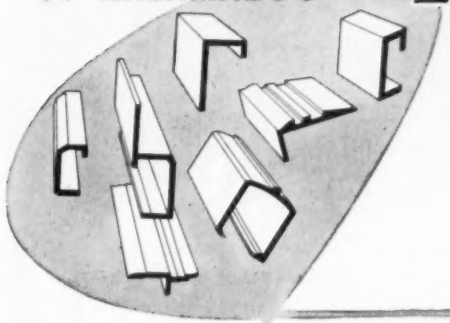
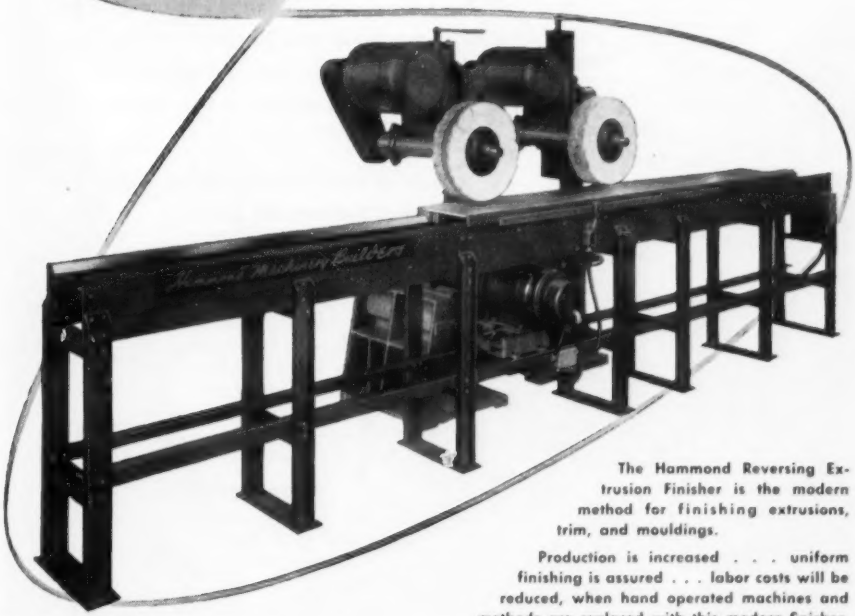
Circulation over 20,000—largest in the finishing field

Hammond OF KALAMAZOO

REVERSING EXTRUSION FINISHER

for LOW COST, VOLUME PRODUCTION FINISHING OF EXTRUSIONS, TRIM AND MOULDINGS





Two-Head Machine shown . . . any number of heads, and length of conveyor, can be supplied to suit your job.

The Hammond Reversing Extrusion Finisher is the modern method for finishing extrusions, trim, and mouldings.

Production is increased . . . uniform finishing is assured . . . labor costs will be reduced, when hand operated machines and methods are replaced with this modern finisher.

SEND SAMPLES and we will show you how much you can speed up production and cut costs.

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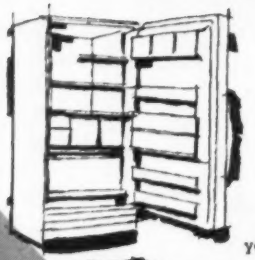
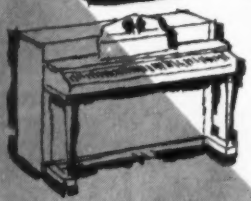
KOCH

CONVEYORIZED SYSTEMS ARE USED TO

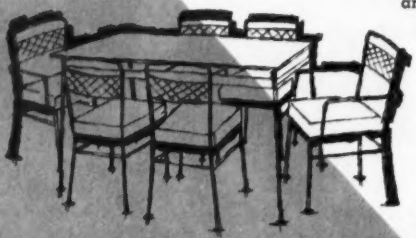
finish almost everything

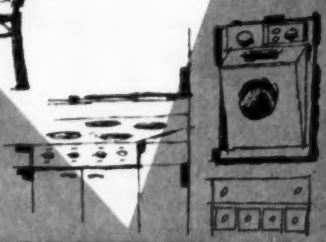


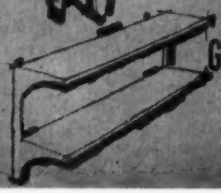


Koch's specialized engineers will make an exhaustive analysis of your production problems. They are experts in finishing methods. They know how to save you money, speed production, reduce handling, eliminate fatigue and improve your product.

Write for list of users of Koch Finishing Systems. Learn from them how you can improve your product, production and profit with Koch Finishing Systems.







GEORGE **KOCH** SONS, INC.

EVANSVILLE 4, INDIANA

CHICAGO DETROIT

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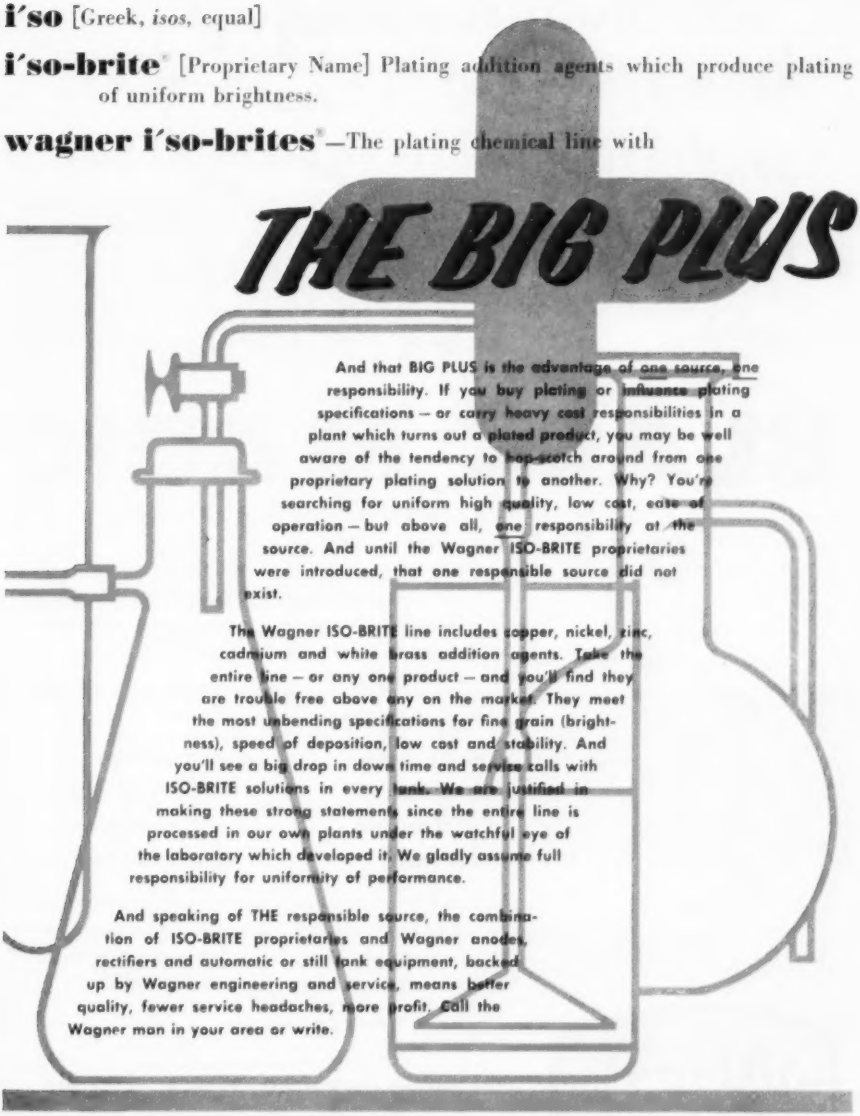
i'so [Greek, *isos*, equal]

i'so-brite® [Proprietary Name] Plating addition agents which produce plating of uniform brightness.

wagner i'so-brites®—The plating chemical line with

THE BIG PLUS



And that BIG PLUS is the advantage of one source, one responsibility. If you buy plating or influence plating specifications — or carry heavy cost responsibilities in a plant which turns out a plated product, you may be well aware of the tendency to hop-scotch around from one proprietary plating solution to another. Why? You're searching for uniform high quality, low cost, ease of operation — but above all, one responsibility at the source. And until the Wagner ISO-BRITE proprietaries were introduced, that one responsible source did not exist.

The Wagner ISO-BRITE line includes copper, nickel, zinc, cadmium and white brass addition agents. Take the entire line — or any one product — and you'll find they are trouble free above any on the market. They meet the most unbending specifications for fine grain (brightness), speed of deposition, low cost and stability. And you'll see a big drop in down time and service calls with ISO-BRITE solutions in every tank. We are justified in making these strong statements since the entire line is processed in our own plants under the watchful eye of the laboratory which developed it. We gladly assume full responsibility for uniformity of performance.

And speaking of THE responsible source, the combination of ISO-BRITE proprietaries and Wagner anodes, rectifiers and automatic or still tank equipment, backed up by Wagner engineering and service, means better quality, fewer service headaches, more profit. Call the Wagner man in your area or write.

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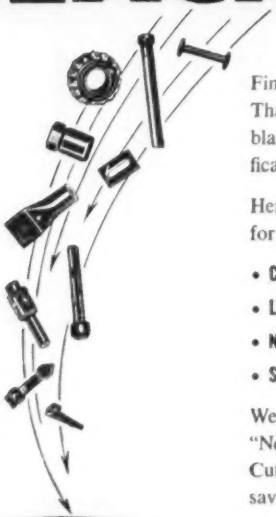
keep your production in the **BLACK** *with*

BLACK MAGIC

as illustrated by the rehabilitation of small tools*



Final inspection is the measure of successful production. That's why it is important to use BLACK MAGIC as the black oxide finish. It meets or surpasses government specifications and all other black oxide specifications.

Here are a few of the advantages of using BLACK MAGIC for tool maintenance.

- **Corrosion reduction**
- **Less chip adherence**
- **New tool appearance**
- **Sharper grinding**
- **Reflection reduction**
- **Improves cutting qualities**
- **Longer service life**
- **Reduces grinding time**

We would like to send you a reprint of an article entitled "New Life for Small Tools — Rehabilitation Treatment Cuts Resharpening 50%". It tells how manufacturers are saving thousands of dollars on tool maintenance.

* BLACK MAGIC PROCESS U. S. PATENT #2,355,007

Mitchell-Bradford

THE MITCHELL-BRADFORD CHEMICAL COMPANY
Wampus Lane, Milford, Connecticut

QUALITY PRODUCTS OF CHEMICAL RESEARCH

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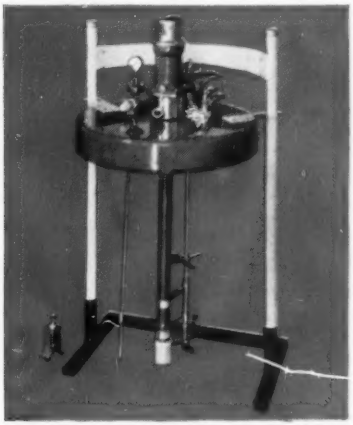
BALCRANK® Announces
NEW PUMPING EFFICIENCY
with the New 3.65 to 1 Ratio *Jet Power* Pump



Model P-15 complete with Airlift also available without Airlift

12 or more sprayers pump liquid — from the same drum simultaneously!

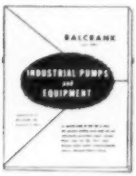
Benefit by more production efficiency because production-tested Balcrank Air-Operated Jet-Power Pump with 3.65 to 1 ratio is master-built to pump paints, abrasive oxides, synthetics, lacquers, etc. Imagine it! Now long-circulating systems can deliver four constant-flow gallons per minute to 12 or more spray guns — from the same drum! Airlift (illustrated) allows quick change of drums.

1½ to 1 ratio Pump also available

For over 50 years — Balcrank has served the Machine Tool and Automotive industries, specializing in pressure-pumping of oils, greases, viscous and abrasive materials.

Now — this NEW air-operated Jet Power Pump is available for immediate shipment to you.

New design provides for trouble-free handling of ferrous oxide and other abrasives commonly affecting pump service.



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PUMPS

Industrial Pump Division
BALCRANK INC.
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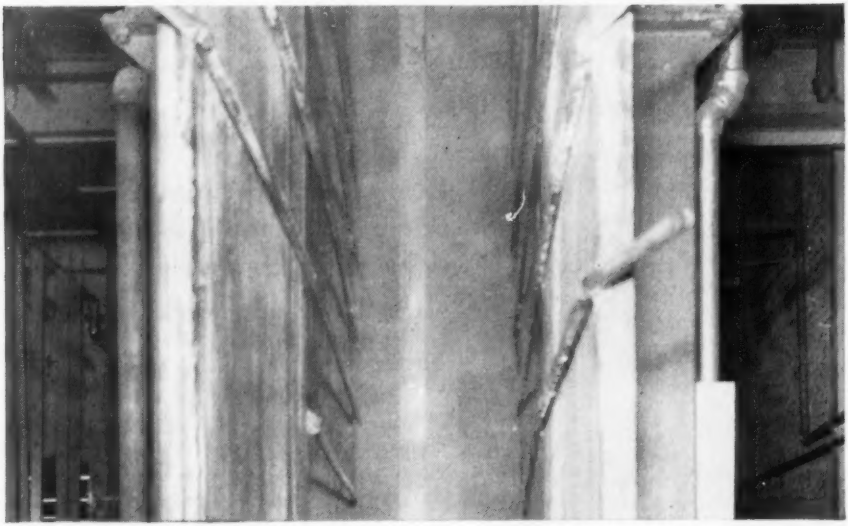
REPORT NO. 5 / ON LOWERING TODAY'S COST OF PRODUCTION



Combined cleaning-phosphatizing speeds production, lowers costs

One pound of Divobond per 1,000 square feet of work

Where equipment, stock and operating conditions permit, the entire organic finishing pre-treatment cycle can be speeded up without any sacrifice in product quality. As work passes through a Diversey Divobond phosphatizing spray, soil is rapidly penetrated, flushed away, and a tightly adherent iron phosphate coating covers the metal. Surfaces are left with the uniform, iridescent appearance of a quality phospate treatment.

Divobond's unusually high cleaning action (for a phosphatizing compound), makes one operation cleaning-phosphatizing a reality in many plants where the two operations had been divided. The result is faster production and lower compound requirements.

Divobond is so effective, only one pound is required to *clean and phosphatize* 1,000 square feet of work. Since Divobond coatings are tightly adherent, should the finish be broken, the phosphate coating will not fracture to expose the base metal. This safeguard against rust is an important reason why Divobond is favored for manufacturing many consumer items.

For illustrated literature on Divobond and No. 519, write to The Diversey Corporation, 1820 Roscoe Street, Chicago 13, Illinois.

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BALANCED QUALITY *

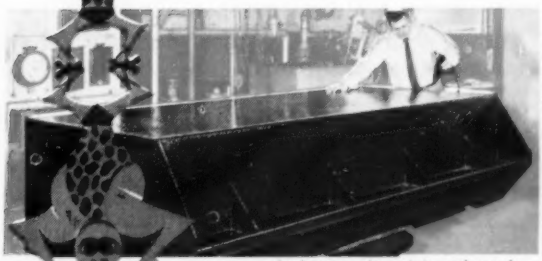
Keeps **MICCROSOL** on top

Developed originally as a coating for plating racks, Miccrosol E-1003 has all the desirable characteristics which make it an ideal coating for many other applications.

The chemical resistance of Miccrosol is unequalled in its field. Its toughness, abrasion resistance, resilience, and flexibility are unsurpassed. It's easy to apply in either a *dip* or *spray* formula. When necessary, it's easy to repair.

Year after year we build this quality into Miccrosol, improving it whenever possible and practicing every economy in its manufacture that does not compromise the excellence of the product.

This BALANCED QUALITY enables you to use Miccrosol *profitably* while assuring your customers of coating jobs that will prove superior in their performance.



Spark testing a large plating tank coated with Miccrosol Spray S-2003.

Coating a large section of duct by dipping in Miccrosol E-1003.

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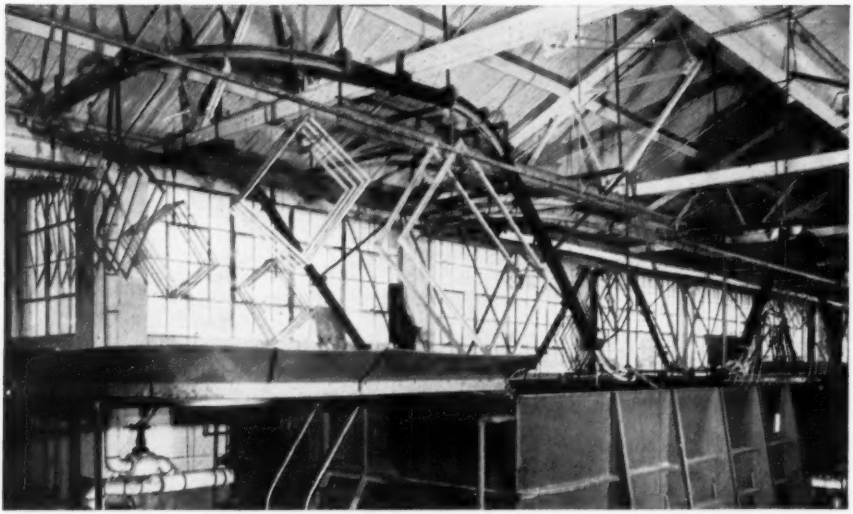

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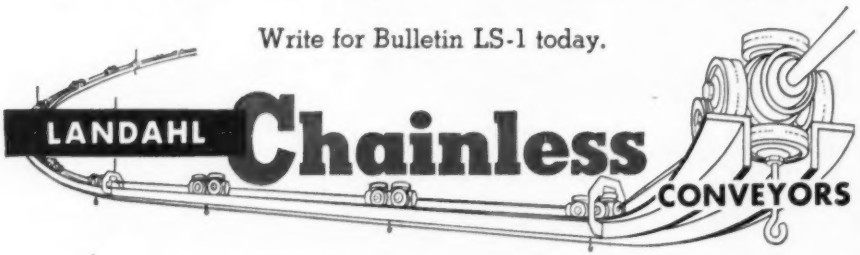
Using "wasted space" overhead, Landahl Chainless Conveyor moves aluminum sash from the fabricating area through five separate cleaning and plating tanks, a spray booth and drying oven.

This is accomplished by Landahl short radius, vertical and horizontal curves, plus skillfully engineered trolley carriers.

Let an experienced Landahl Conveyor engineer recommend a system for lower cost handling through the use of wasted overhead space.

Write for Bulletin LS-1 today.



The LANDAHL CONVEYOR CO., 13142 Athens Ave., Cleveland 7, Ohio

A SUBSIDIARY OF THE AMERICAN MONORAIL COMPANY

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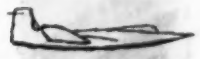
LOOK AT THESE ADVANTAGES OF

IRIDITE® FINISHES

for

CORROSION-RESISTANCE, PAINT BASE ON ALUMINUM AND MAGNESIUM

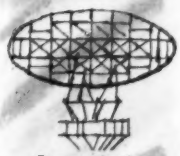
TYPICAL APPLICATIONS



Aircraft and Missile Parts

Automobile Hardware

Outdoor Furniture



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EASE OF USE—Iridite is a simple chromate conversion treatment. Fast, easy, economical. Dip, brush or spray it on at room temperature. No special equipment. No specially trained personnel.

OUTSTANDING PERFORMANCE—Integral film can't flake, chip or peel. Takes paint firmly on initial application, and the bond lasts. Even protects areas scratched in use.

LOWEST COST—You have only minimum equipment cost, no special racks, high speed operation, lower overall handling costs.

CHOICE OF APPEARANCE—Clear coatings that retain metallic lustre to dark, maximum protection coatings. Dyes available, too.

IRIDITE #14 and #14-2 (Al-Coat) for ALUMINUM—Both provide excellent corrosion protection and paint base. Iridite #14-2 is an improved product that allows greater flexibility in operation and coating thickness and produces the optimum in corrosion protection. Either coating provides corrosion resistance superior to complicated electrolytic treatments in a fraction of the time. These coatings also have low electrical resistance, aid in arc-welding, provide a good base for bonding compounds, have no effect on the dimensional stability of close-tolerance parts. Choice of appearances ranging from clear through yellow iridescence to full brown. Red, green, blue, orange or yellow dyes available.

IRIDITE #15 (Mag-Coat) for MAGNESIUM—Produces a protective, paint base film with corrosion resistance at least equal to long, high-temperature dichromate treatments in a fraction of the time and at room temperature. Appearance can be varied from light brown to dark brown and black.

APPROVED UNDER GOVERNMENT AND INDUSTRIAL SPECIFICATIONS

SEE FOR YOURSELF WHAT IRIDITE CAN DO . . . SEND SAMPLE PARTS FOR FREE PROCESSING. Also write for handy Reference File on Iridite chromate conversion coatings. Or, for immediate information, call your Allied Field Engineer. He's listed under "Plating Supplies" in your classified phone book.

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West Coast Licensee—L. H. Butcher Co.

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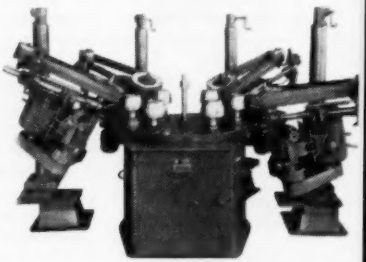
Sparkle

costs less when you polish and buff the *Acme* way

It's the gleam in stainless, the sparkle in chrome that sells consumer goods today—a fact that makes the finishing line your most important operation. Unfortunately it may also be your most costly. This problem can be solved, however, by Acme engineers with Acme polishing and buffing machines.

Reduction of costly rejects, increased volume of production, complete machine finishing of odd-shaped problem pieces—these are a few of the cost-reducing solutions that Acme engineers have provided for troubled manufacturers. The cost is low, too, because these engineers combine Acme-designed *standard units* and a wide variety of accessories to design a *custom machine* for your job.

In plant after plant, Acme progressive engineering has built equipment that does it fa and better, too. Every year Acme meets parts and new finish requirements, eac individual problem. What's yours?

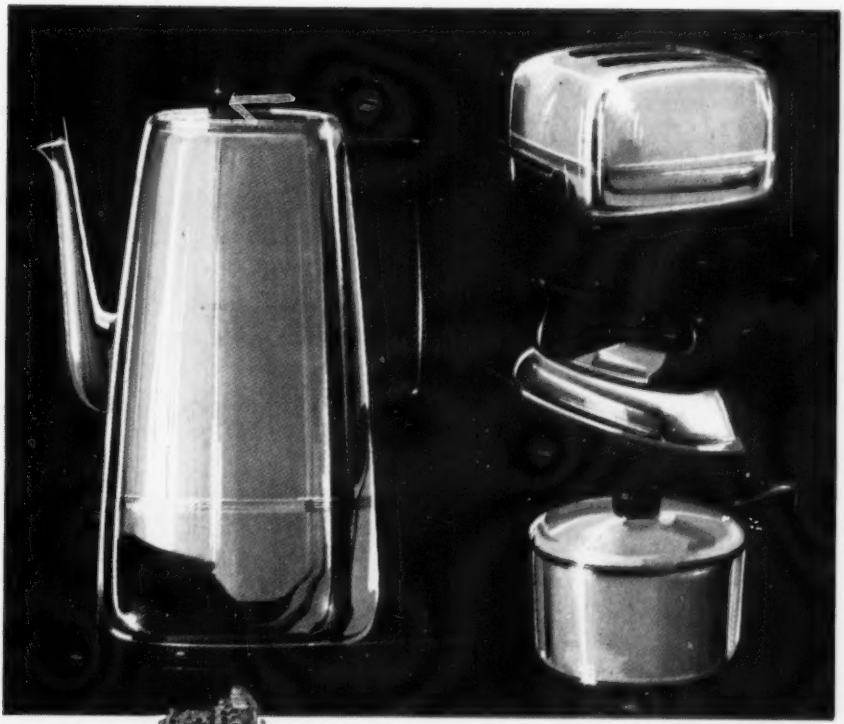


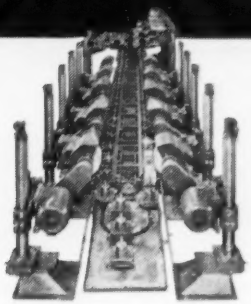
This Acme automatic 40-inch rotary with : station indexing table provides large vo polishing of cooking utensils. Four stations Acme adjustable floating head buffing l with polishing belt arm attachments, an remaining two stations are used for lo and unloading.

LET ACME *Polish Off* YOUR FINISHING PROBLEMS

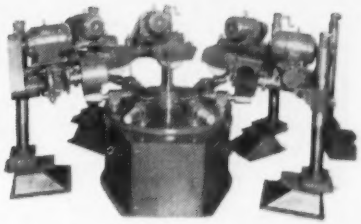
ACME MANUFACTURING COMPANY

LEADING PRODUCERS OF





Toaster bodies get fast, uniform buffing on this Acme 60-foot straightline conveyor with horizontal return. It is equipped with 16 heavy-duty adjustable floating head polishing and buffing lathes and universal indexing fixtures and adapters.



Vacuum chucking is featured on this Acme rotary automatic machine that buffs metal tumblers. Seven-station unit has five work stations and two loading and unloading stations. Typical of Acme flexibility, it easily changes to six work stations and one for loading and unloading.

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AUTOMATIC POLISHING AND BUFFING EQUIPMENT SINCE 1910

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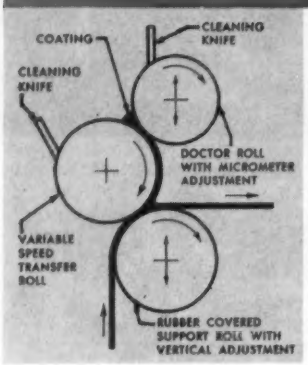
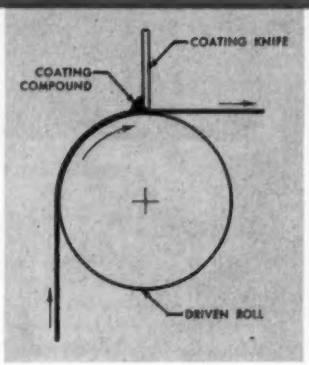
no matter how customers apply your finishes... there's an Exon solution resin *pin-pointed to your special needs*

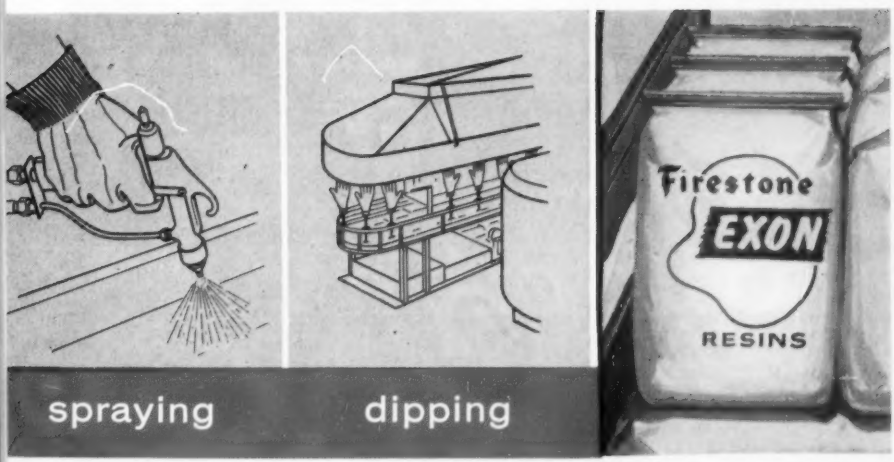
rolling | knife coating | brushing





Firestone

Industry's most complete line of vinyls engineered to your specific needs



Methods of applying protective coatings vary and Firestone has engineered 6 Exon solution resins to meet the special needs of each type of application.

Each Exon solution resin differs in solubility and adhesion to fit the precise requirements of various solution coatings. Each is resistant to chemicals, abrasion, corrosion and weather. Each dissolves quickly in appropriate solvents.

No wonder more manufacturers of solution coatings turn to Firestone to solve their problems. Consider your own. Then, for the solution resin with properties pin-pointed to the best answer for you, check with Firestone.

Here Are 6 Solution Resins Engineered for Successful Coatings

EXON 450 For low cost strip coatings. Good solubility, tensile strength and durability.

EXON 461 A unique fluorine-containing resin combining high solubility, unusual chemical resistance, heat stability and weatherability.

EXON 470 Excellent adhesion to metals, alkyd, vinyl surfaces. Compatible with wide range of drying oils, alkyds, phenolics, melamines. High solubility in low-cost solvents.

EXON 471 Excellent for weatherability and durability in a protective coating. Corrosion resistant.

EXON 481 Makes possible high strength colorful, abrasion-proof, coatings that resist fading or cracking.

EXON 485 For superior strip coatings. Lower viscosity makes application easier and shelf-life better. Good clarity.

For complete information and technical service, call or write:

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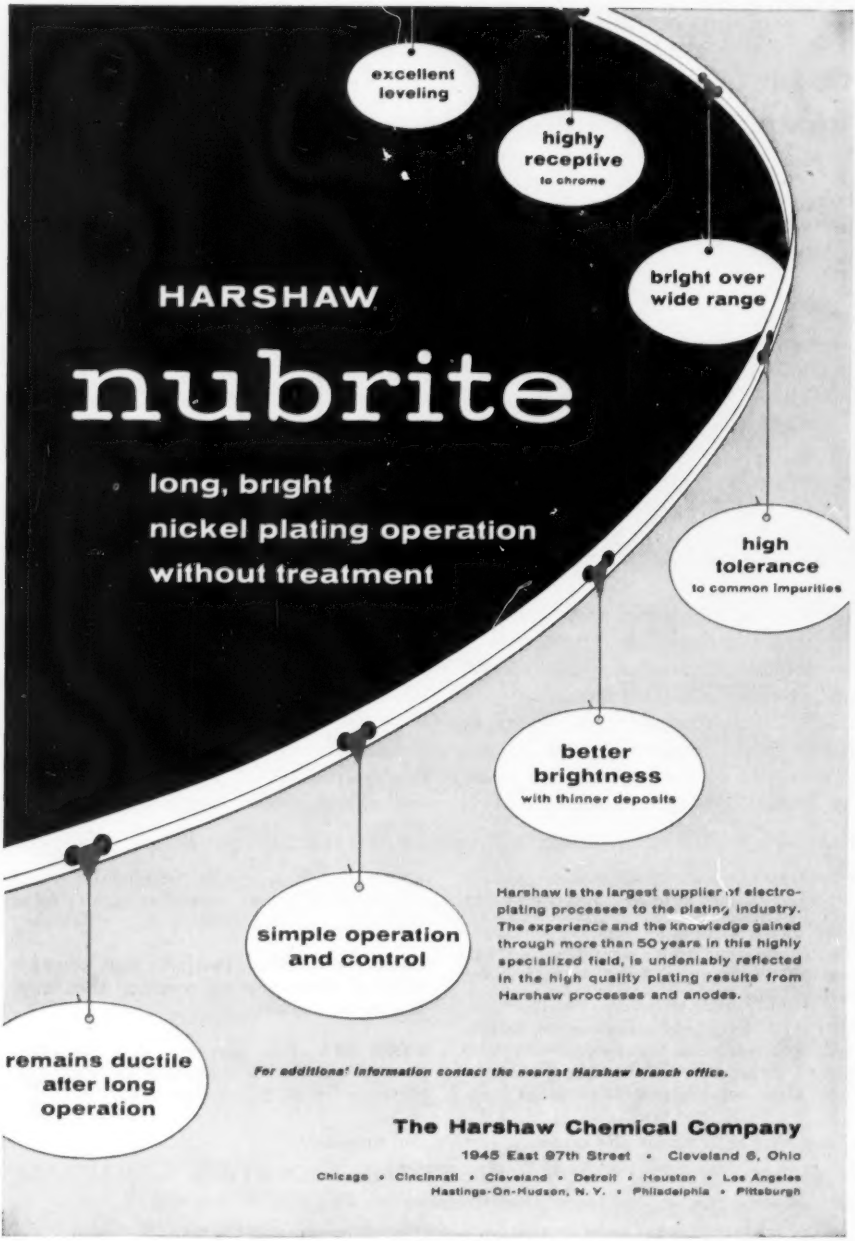
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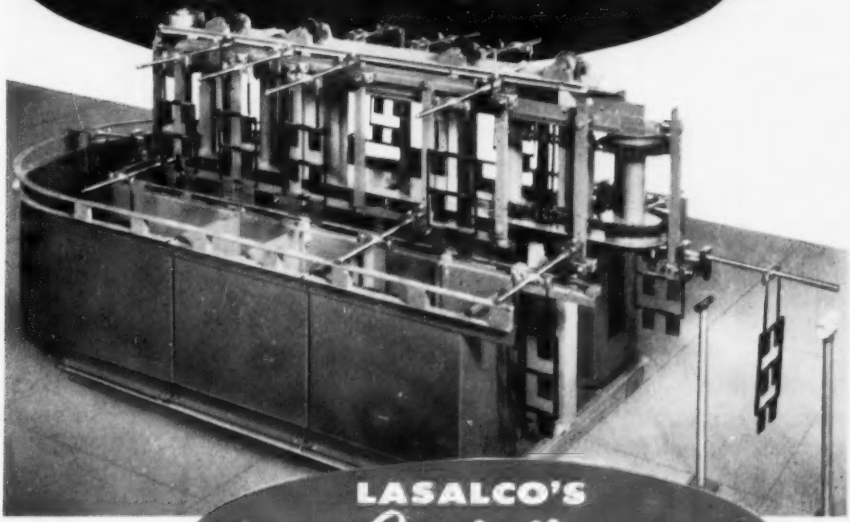

LASALCO'S

New! *Cycleflex*

- Cycle changing requires no costly overhaul or rebuilding. Only the positions of pick-up heads need be moved, plus minor tank partition changes.
- New, simple electro-mechanical control and safety device eliminates all possibility of conveyor failure . . . makes it impossible to push racks into side of tank . . . prevents load from dropping if power fails during work transfer.
- Unusually low headroom required because no elevating mechanism operates above rack carrier.
- Self-cleaning heavy duty contacts have positive 3-point connection . . . need practically no attention.
- Easily removable rack carriers leave tank surfaces clear . . . an advantage in servicing and in manual plating of large pieces.
- Automatic loading and unloading of parts from standard double-spine racks is available . . . parts can be automatically unloaded while racks stay on machine.

Hydraulic operation, standard; pneumatic operation, optional.

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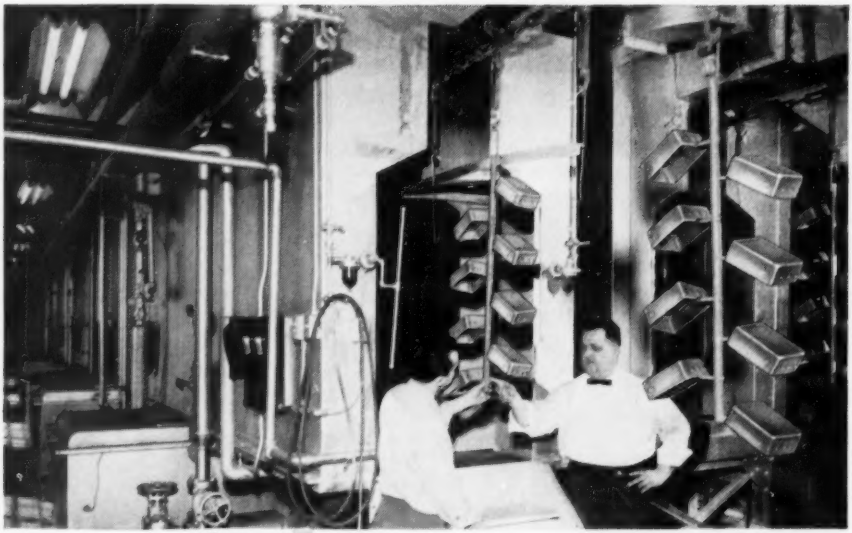

Cowles QC

TEAMED WITH TY-BOND CUTS ALLEN BRADLEY CO. COSTS 30%

Manufacturers of quality motor controls, the Allen Bradley Co., Milwaukee, has reduced costs of chemicals and set a new minimum for rejects caused by cleaning and phosphating.

"QC Cleaner has provided the most consistent, versatile cleaning that we have encountered. Corrosion resistance of organic coatings over Ty-Bonded steel is greater than with other phosphate coatings tested," says this manufacturer who uses a six stage phosphating unit.

If you have a cleaning or phosphating problem, write us today for QC Technical Bulletins and Ty-Bond. We'll prove how Cowles Chemicals can help you.

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Needed: Courage and Hard Work

In our present-day complex industrial organization, there is a tendency to forget the fact that each giant enterprise was started by a far-sighted, hard-working individual, or small group of individuals, with an idea and the courage to try to make a dream come true. Today, "Small Business" is defined in government circles as a business employing up to 500 people. This is not so much a contradiction of the idea of small business as it is an indication of the fact that so many businesses have grown so large.

Most of the companies whose interests are exclusively in the finishing industry are really "small business." A job finishing shop with 50 employees is a good-sized operation with a substantial investment in plant and equipment. Likewise, a local supply business can be operated by one to four men and produce a sizeable sales volume.

The history of the finishing industry provides many examples of the establishment of job finishing shops and finishing equipment and supply companies by a few "rugged individuals." This process is still going on today. This fact is important to our industry and to every other industry; it illustrates the fact that the finishing industry is a youthful, growing, dynamic industry.

Today, there is a tendency to be security conscious—conscious of the guaranteed annual wage, the 8-hour day, retirement pension, social security benefits, and so on. These influences reduce the incentive for a man to start a small business. Incentive is further reduced because today a much greater initial capital investment is required in order to be able to compete effectively.

The strength and vitality of our country and our industrial society is only as great as the power of individual initiative. Curbs on individual initiative, in whatever form, weaken a force that is the source of a great deal of our national vigor. The civilization that we know and the many blessings we enjoy were created by people who were more interested in opportunity than security—who depended upon their own resourcefulness and created their own security by their hard work.

Today, as much as ever, the small organization can fill a need and render service in our industrial structure. The small business has the advantage of being more flexible, it can specialize in certain processes, and sometimes it can give faster and more satisfactory service.

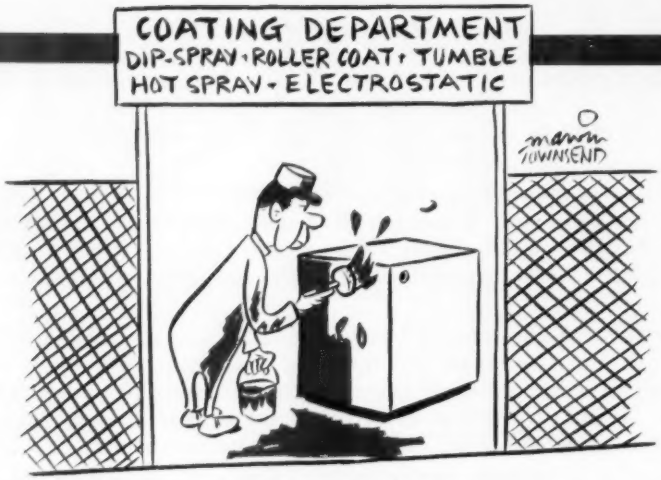
We should have a very warm feeling for the "rugged individual" who, with an idea and a little money, starts a business that grows and eventually provides job opportunities for many others. Such a man is willing to accept the risks, endure the many "headaches" and overcome the many obstacles in exchange for the opportunity to build an entirely new business enterprise.

We salute him! May his tribe increase!

Ezra A. Blount

—EDITOR

A Survey of Paint



Part IV: Dipping Methods; Flow Coating

By EZRA A. BLOUNT
Editor

products finishing feature

PAINT APPLICATION BY DIPPING is a well-known coating method. Such articles as bicycle frames, filing cabinets, bed springs, refrigerator and other metal shelving, metal drawers, toys, handles, farm machinery and various automobile and aircraft parts are finished by this method.

Paint dipping was probably in use prior to the invention of the spray gun. The relative simplicity of the process makes it attractive as an economical paint finishing method in cases where its inherent limitations are not objectionable. Parts to be dip-coated must be relatively uniform in shape so that they can be immersed in the paint without trapping air, and withdrawn (without trapping paint) with a film of

Application Methods

the coating material applied evenly to the surface. Mechanical or chemical means must be employed to eliminate runs, sags, and similar defects, or reduce them to the point that they are not causes for rejection of the finished part.

Dip tanks should be designed as small as possible, yet still large enough to handle the desired articles and provide adequate clearance. The smaller the tank, the higher is the turnover rate and stability of the paint. The dip tank should be no larger in volume than the volume of paint estimated to be consumed in the tank in two to three months. A dip tank should be narrow and deep in design so that the exposed surface of the paint is as small as possible.

Equipment to apply paints and lacquers can be simple (Fig. 1) or more complicated (Figs. 2, 3, 4, 5, 6, 7). In any case it is necessary to control temperature and viscosity of the organic finishing material. The material must be kept uniform in composition, and, for conveyorized installations, should be filtered and circulated to eliminate dirt and keep viscosity uniform. Some finishing materials require less attention than others.

The dipping method has been incorporated most successfully into modern conveyorized finishing systems. An installation consisting of one or more paint dip tanks and an oven is illustrated in Figs. 2 and 3. A cross-rod conveyor connects a loading station with the paint dip tank, a baking oven, and an unloading station. The dipping is com-

Fig. 1—End brackets for a television table are finished by hand dipping in a gold-pigmented lacquer at Dodson Industries, Inc., Kansas City, Mo. An open-top drum is used as the dip tank, and a motor-driven agitator helps to keep the pigment in suspension.

"Parts dip into the paint at such an angle as to cause the least amount of turbulence and drag out the least amount of paint."

pletely mechanical. As many as 50 small parts, such as steel lamp rims, may be loaded on a single 6-foot cross-rod of the conveyor (Fig. 2). The conveyor, moving at 3 feet per minute, immerses the parts in the paint. After the parts leave the paint dip tank, they drain for a short period, then are "de-teared" by passing over a bead removal wire (Fig. 3). The parts then proceed into an oven for baking, and on to the unloading station.

The dipping installation includes a recirculating pump and a filter. A dam-type overflow keeps the level of the paint constant—an essential point. Parts dip into the paint at such an angle as to cause the least turbulence and drag out the least amount of surplus paint. As parts leave the dip tank, each row is drawn over a wire strung across the conveyor path parallel to the crossbar (Fig. 3). This tilts the parts, so as to drain off the excess paint, and also removes small droplets of paint which form on the lower edge. Dip tanks are mounted on rollers to facilitate changing colors.

Figure 4 shows a compact, automatic paint dipping and baking machine.

Only 42 square feet of space are used in this unit which applies primer to handles of cutlery pieces,

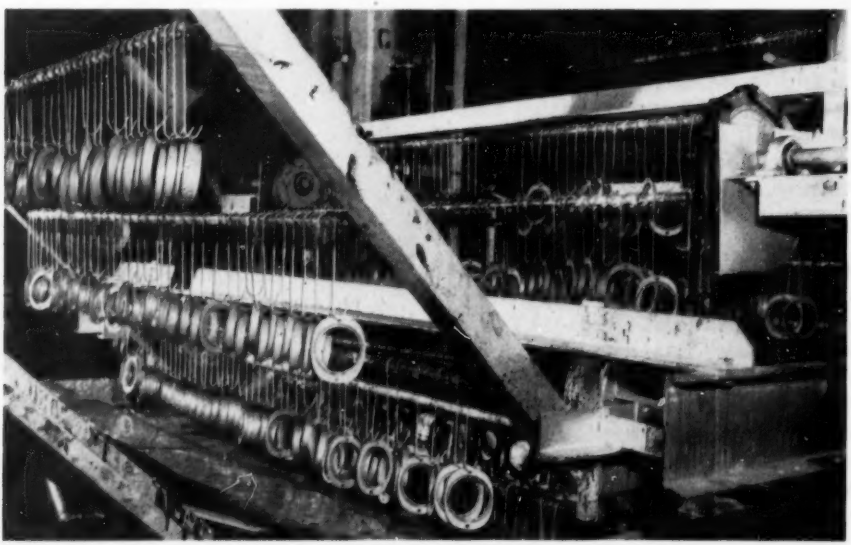


Fig. 2—Steel lamp rims are dip-finished in aluminum baking enamel in this mechanized dipping and baking setup. Parts enter dip tank at right and are withdrawn at left as the conveyor moves up an inclined path to overhead oven. (PRODUCTS FINISHING Photo.)

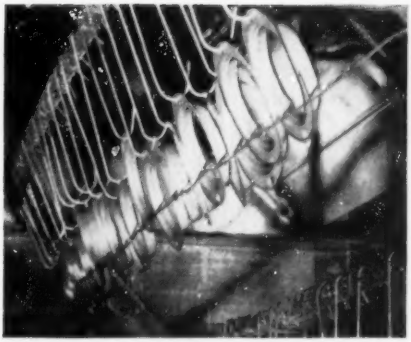


Fig. 3—This bead removal wire, which is located just above the dip tank, removes excess paint from the bottom edges of lamp rims as they proceed past the wire to the baking oven. (PRODUCTS FINISHING Photo.)

bakes and preheats them, applies a finish coat, bakes again, and delivers the finished product at the rate of 24 pieces per minute. Since the unit is loaded and unloaded at the same end, one operator handles both tasks.

This conveyorized dipping and baking setup consists of a horizontal conveyor, two movable dip tanks, and an oven. The cutlery pieces are suspended from horizontal parallel bars, which are attached to two strands of roller chain, and thus are carried through the machine.

In operation, the conveyor moves forward in its underpass to a point where the prime coat tank is raised (by an air operated cylinder, which is adjustable to various heights to accommodate different sized pieces) to permit dipping the pieces on one bar. Simultaneously the tank at the other end of the oven is raised to dip the items on another bar with the finish coat. A timer indexes the conveyor so that the work is immersed in each tank for the same period of time. Between the tanks, (each of which is equipped with a recirculating pump) the pieces move through an oven, where the prime coat is baked and pieces are preheated for the final finish coating. After application of the finish coat, the bars move over a sprocket and return through the oven, so as to bake the finish coat.

The oven is constructed of aluminized steel panels insulated with glass wool preformed blocks. Heat for the oven is supplied by two banks of electric heaters, one mounted under the conveyor and one above it, with motor-driven fans recirculating the air. An exhaust fan removes volatiles from the oven. A glass panel in the hood at the end

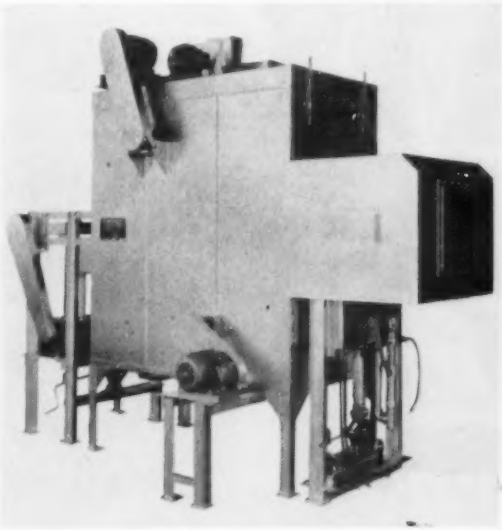


Fig. 4—An enclosed "packaged" automatic dipping unit for priming, finish-coating, and baking cutlery articles. (Photograph courtesy W. S. Rockwell Company, Fairfield, Conn.)

Fig. 5—A narrow, deep dip tank is used for dip-finishing office equipment with one coat of gray baking enamel at The Wright Line, Inc., Worcester, Mass. An inclined drain trough returns most of the excess paint to the dip tank. (PRODUCTS FINISHING Staff Photo.)

of the oven permits inspection of the work in progress. Indicating temperature controllers and air flow switches help assure safety.

Larger objects may also be dip finished mechanically. Figure 5 shows metal assemblies for office equipment being dipped in gray baking enamel. As can be noted, the overhead monorail conveyor carries the parts down into the paint dip tank and out again. Following a suitable draining cycle in open air, the parts are baked in an infra-red oven mounted just under the plant ceiling. The system is so designed that the same operator can load and unload the conveyor. The enamel is circulated and filtered continuously.

The chief requirement for a part to be dip finished is that it be so shaped that it can be coated completely and that it will drain easily and uniformly. Although it has not been used in connection with paint dipping, a vapor drain chamber through which dipped parts could be processed prior to baking would help to eliminate trouble caused by sags, beads, and runs.

Various mechanical means of removing beads from the drain edges of dipped parts are employed. Detearing of dipped parts can also be accomplished by conveying the parts through an electrostatic field. This process is known as the Ransburg electrostatic detearing system.

An important factor in the dipping process is the speed of dipping. Figure 6 shows an installation in which condenser coils for air conditioner units are dipped in gray dipping primer and withdrawn slowly. Primer temperature and viscosity are controlled closely. The conden-

"An important factor in the dipping process is the speed of dipping."

ser coils are loaded on frames which are lowered into the primer and withdrawn at a rate of from 2 to 4 inches per minute. The rate of rise is controlled by an air cylinder. Painted coils are removed and hung on an overhead conveyor to be transported into an oven for baking.

Another installation in which speed of withdrawal of the dipped parts is essential is shown in Fig. 7. Wire assemblies for automatic washers are coated with white vinyl plastisol in the double dip tank unit shown. The racks of wire assemblies are lowered slowly into the plastisol to minimize the possibility of bubble formation in the viscous material. Each rack is attached to a variable-speed motor-driven overhead hook which automatically withdraws the racks from the plastisol

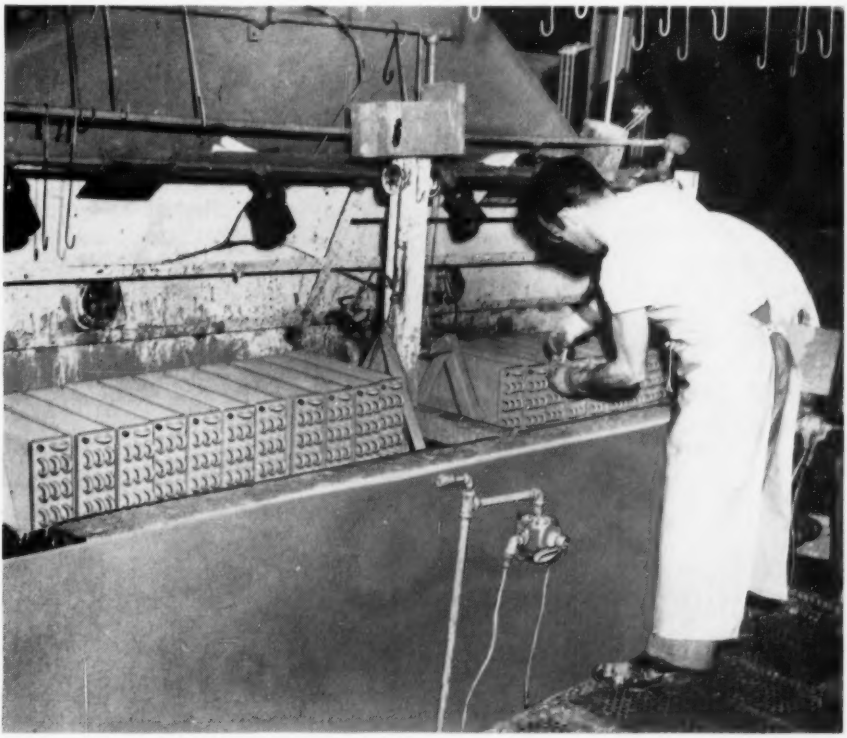


Fig. 6—One load of condenser coils for air conditioner units descends into the gray dipping primer as the other load emerges. Painted coils are unloaded, hung on an overhead transport conveyor which carries them through a baking cycle. Setup is in the Syracuse, N. Y., plant of the Carrier Corporation. (Photo by PRODUCTS FINISHING.)

at the rate of 4 inches per minute.

Hot-Dip Process

A few years ago, a patent was issued covering a hot-dip process of applying paint. The process involves heating the coating material (which contains trichlorethylene as a solvent) to 160 deg. F., dipping the parts to be painted in the hot paint, and withdrawing them. The dip tank is placed under or adjacent to cool walls of the chamber. The articles to be coated are dipped into the hot liquid, then withdrawn past cool walls immediately above the hot liquid. The heat which has been absorbed by the article drives the solvent out of the coated film. The solvent evaporates and the vapor is condensed in the cool area and is returned to the solution, or diverted to a unit used for recovery.

PRODUCTS FINISHING Magazine

Flow Coating

An outgrowth or further development of the paint dipping process in which paint is "poured" or "flowed" on the products is known as "flow cloating." This painting method is being used for applying primers and topcoats on appliances, garden furniture, farm implements, air conditioners, and other metal products. The flow coating process involves the application of paint through a series of nozzles as parts to be coated move through the coating chamber on an overhead conveyor. The paint is recirculated, filtered and controlled as to temperature and viscosity. The coated parts pass into a vapor drain chamber which contains a controlled quantity of solvent vapor. In this atmosphere a uniform film of paint is produced on the parts. Excess paint drops to the floor of the chamber and returns to the circulating system. The solvent vapor eliminates runs or beads and produces a uniform paint film so that the coated product can pass directly to a baking oven or a free-air drying area.

Key to the success of the flow coating method is the vapor drain chamber, into which the painted parts pass directly from the flow coat tunnel or booth. In the vapor drain chamber, the excess paint drains off the parts leaving a smooth, uniform film of the desired thickness. Solvent vapor concentration in the enclosed chamber aids

in accomplishing this result. Most of the excess paint which drains off the parts flows by gravity back to the paint tank, where it is returned to the system.

Three general flow coating methods are in use, as well as different nozzle designs. These methods are:

1. Stationary nozzle flow coating.

In this process flow coating is accomplished by a large number of stationary nozzles. Sufficient nozzles are employed so that a coating can be applied to all of the required areas. This type machine requires a relatively small vestibule, and prac-

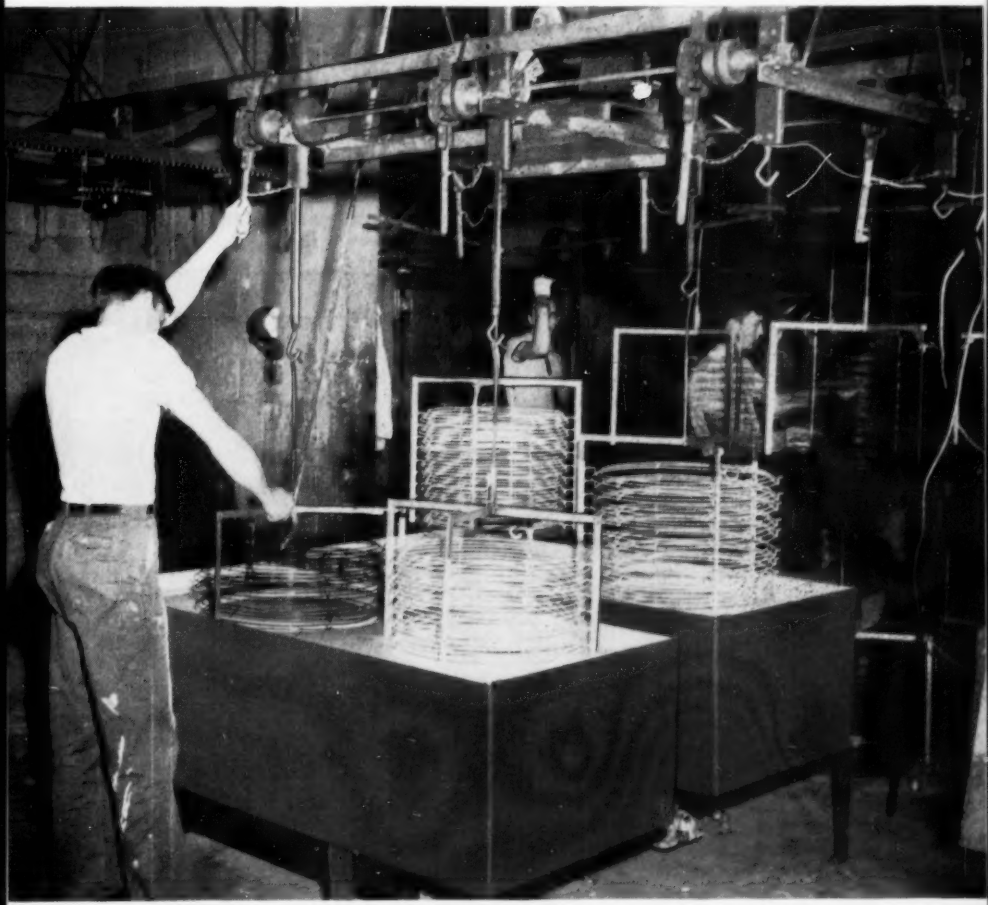


Fig. 7—At Industrial Electroplating Company, Indianapolis, Indiana, a double-tank dipping setup is used to coat wire assemblies with plastisol. Rate of withdrawal is important here. Coated parts are baked in a quartz oven. (PRODUCTS FINISHING Staff Photo.)

". . . it has been found desirable to depress the level of the flow coating chamber below the level of entrance and exit openings."

tically no drain chamber. The process is sometimes known as "high pressure" flow coating.

2. Moving nozzle flow coating.

The revolving or moving nozzle type flow coating has found widespread application in the appliance industry because of the smaller number of nozzles required to coat a given object and, therefore, the greatly reduced pump capacity, circulating tank capacity, and so on. A low volume of material and a high degree of atomization (mechanically imparted) are characteristics of this process. Machines of this type have been installed for production application of an epoxy type primer on laundry appliances. They have proven their ability to coat many relatively inaccessible areas. These machines are generally installed with a large drain chamber and with many convenient piping arrangements, to give maximum flexibility in flow coating machine operation.

3. Low pressure flow coating.

Fig. 8—View of flow coat chamber or tunnel where primer is applied to appliance parts at General Electric Company's Appliance Park, Louisville, Ky. Nozzles in the flow coater are aluminum. (Photograph courtesy General Electric Company, Louisville, Kentucky.)

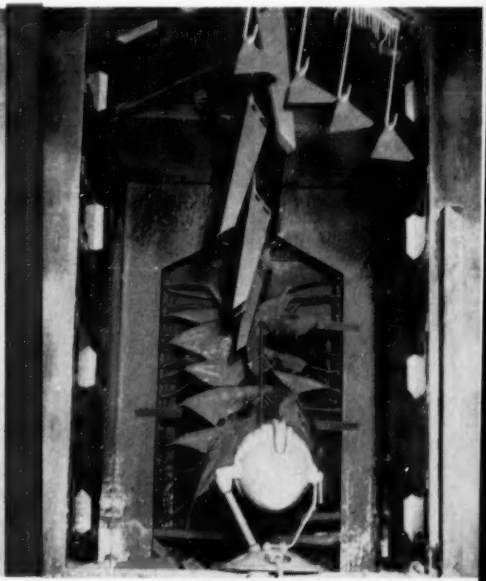


Fig. 9—Entrance to one flow coat paint booth at Carrier Corporation. In this flow-coat installation, interior parts for air-conditioner units are coated with baking enamel. Note how the nozzles produce fan-shaped paint flow. (PRODUCTS FINISHING Photo.)

The term "low pressure" flow coating has been applied to a particular process in which a piece of tubing or pipe normally is used as a nozzle, with very little (if any) restriction on the end of the piece of tubing. Paint flow through this tubing is directed in such a way that the stream of paint strikes the surface of the object to be coated with minimum velocity; therefore, a minimum amount of splash is produced. These machines are built with and without drain chambers. They are doing excellent work on an economical basis in many industrial applications.

Since the solvent vapors involved in flow coating are heavier than air, it has been found desirable to depress the flow coating chamber below the level of the entrance and exit openings. This takes advantage of the "heavier than air" characteristic of the solvent vapors. Vapor losses are thus reduced.

Flow coating lends itself to the application of primers in two-coat finish systems used in the finishing of major home appliances. At the General Electric Company's Appliance Park plant in Louisville, Ky., parts for automatic washers and dryers are prime-coated by flow coating (Fig. 8). Parts are suspended from two-position racks for cleaning, phosphatizing, flow coating and baking.

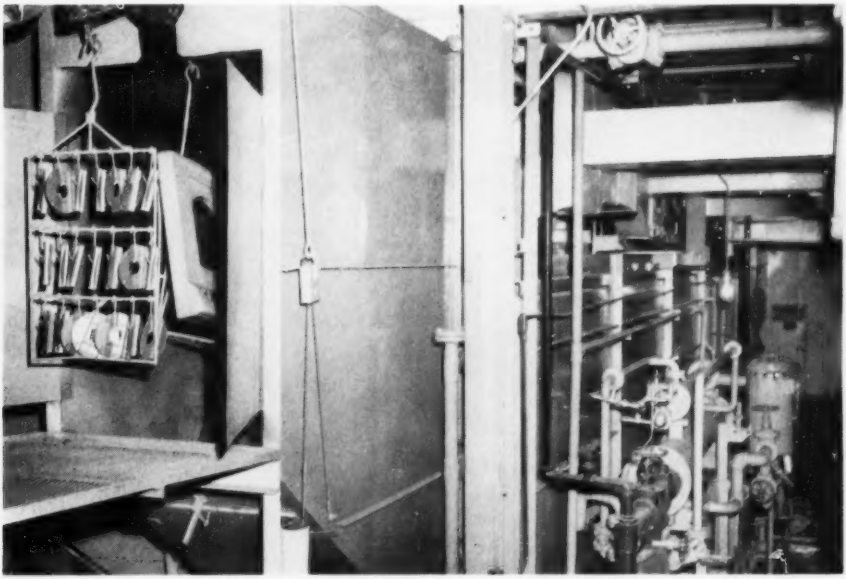


Fig. 10—Small parts are primed by flow coating in one side of this double flow coating machine at Whirlpool-Seeger Corporation, St. Joseph, Michigan. Washer cabinets are flow-coat primed in the adjacent section. Flow coating nozzles are located somewhat below the tunnel entrance to conserve solvent and limit solvent loss. Filters, heat exchangers and circulating pumps are shown at right. (Photo by PRODUCTS FINISHING.)

"Stabilizers and solvents are used to regulate and control the viscosity."

Figure 9 is a view of one flow coat booth used for painting air conditioner interior parts in the Carrier Corp. plant in Syracuse, New York. This operation is a one-coat process in which baking enamel is flow coated on the cleaned and phosphatized parts. Temperature and viscosity of the paint are controlled constantly, and the paint is continually circulated through the flow coat booth, drain tank, and a filter. Stabilizers and solvents are used to regulate and control the viscosity. More than 217 different parts (of this type) are painted by flow coating, and over 8,000 (small) parts can be coated to a film thickness of 1 mil from 50 gallons of baking enamel. Painted parts go through an 80-foot-long vapor drain chamber or drip tunnel.

At the St. Joseph, Michigan, plant of Whirlpool-Seeger Corporation, automatic washer cabinets are prime coated with a 100 per cent

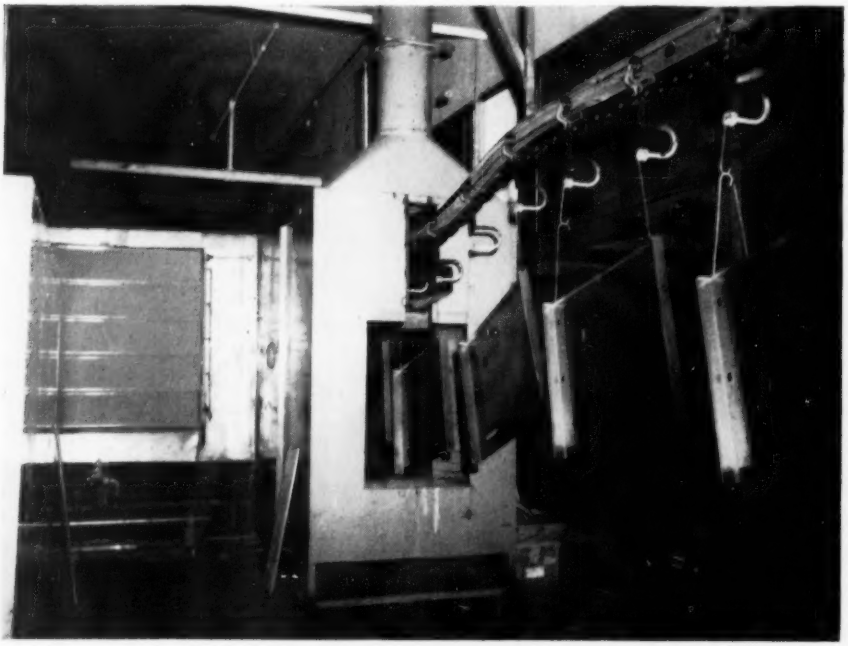


Fig. 11—Entrance to low-pressure flow coat booth used to finish coat range and heater parts with gray enamel. Booth is designed so that conveyor chain is protected from the flowing paint. Just at left of the booth is one of the adjustable dampers which aids in controlling the solvent vapor concentration in the vapor drain chamber, which is just behind the flow coating booth or tunnel. (PRODUCTS FINISHING Staff Photograph.)

epoxy-type primer by flow coating (Fig. 10). Three factors are carefully controlled to keep the prime coat thickness at the desired value (0.2 mil minimum at top of part and 0.7 mil maximum at the bottom). These are: paint formulation, solvent concentration in the vapor drain chamber, and conveyor speed. These variables are interrelated, and a change in any one of them must be compensated for by changes in the other two.

Kitchen range panels, drawers, and various other parts are finished by flow coating with a single coat of gray enamel, which is subsequently baked to form a paint film 1.5 mils thick. This process is employed in the plant of a leading range and heater manufacturer (Fig. 11). The baking enamel is applied by low-pressure flow coating. Enamel is pumped from a 300-gallon supply tank through filters and temperature-controlling equipment and through pressure-regulating valves to two headers spaced 18 inches apart. Each header has an individual pressure control. The enamel is flowed on the metal parts from 60 nozzles located on the two sets of risers and mounted at the proper angles for complete coverage of the products being painted.

Excess enamel drains from the painted parts into collecting pans at the bottom of the flow coat chamber, and passes through sieves or strainers back into the supply tank. The enamel is circulated through the nozzles at 7 p.s.i. The nozzles produce round streams. Drain time in the controlled solvent vapor drain chamber (de-tearing area) which adjoins and is a part of the flow coating booth, is about 20 minutes.

Two exhausts are used to control the solvent vapor concentration in the flow-out chamber. In addition, two adjustable dampers located on opposite ends of the chamber can be pre-set to work in conjunction with the exhausts to admit air as needed. Most of the air enters at the entrance to the flow coat booth and is exhausted at that point, along wih any shop dust, so that the enamel is kept clean.

The entire flow coat and drain chamber is protected from fire with a carbon dioxide double shot system, backed up with a water sprinkler system.

★ ★ ★

PORCELAIN ENAMEL as a protective finish for industrial equipment and components is described in a 20-page booklet available from **The Erie Enameling Company, Erie,** Pa. Special formulas of Porcelain Enamel are described for applications requiring resistance to corrosion, abrasion, heat, thermal shock, and other extreme conditions. Elements of design and fabrication when planning for porcelain enameling are also discussed.

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Abstracts of Literature on Semiconducting and Luminescent Materials and Their Applications. Compiled by Battelle Memorial Institute, sponsored by the Electrochemical Society, Inc. Published by John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 322 pages. Price, $10.

Complete review of the literature on semiconducting and luminescent materials includes sections devoted to germanium, silicon, carbon, selenium, and other elemental semiconductors; intermetallics, sulfides, selenides, and tellurides; oxides, halides, arsenates, phosphates and tungstates; organics; theory; subject index; author index.

Plating and Surface Finishing Facilities for a Machine Shop

By C. C. CLAYTON
Dept. Head, Machine Shop Div.,
Torrance, California Plant,
El Segundo Div., Douglas Aircraft Co.

MACHINE SHOPS THAT ARE SELF-SUFFICIENT insofar as plating and finishing facilities are concerned are rare indeed. Most shops have to send parts to an outside department for processing, whether or not such processing is required before or after the part is finished. This involves both paper work and material handling. In many cases such parts may have to be routed for sandblasting or honing, then to another department for plating, and perhaps finally to a third department for heat treatment. If the part requires some finishing touches after heat treatment, it must be routed back and through the machine shop again before it is ready for the assembly line. If these exterior departments happen to be busy with other work, the machine shop parts may be delayed.

At the Torrance, California, plant of Douglas Aircraft Company, a machine shop with its own processing facilities has been in operation for some time, and, despite the compromise that still requires 10 per cent of the parts to be processed outside, the arrangement has proved most satisfactory.

The production time element has been sharply reduced by not having to send the parts outside the department for processing. Furthermore, because our machine shop processing facilities were designed and installed with an eye to the specialized processing requirements of machine shop parts, and because the employees operating these shop processing facilities are intimately familiar with the specialized requirements, the quality of the processing work accomplished is consistently high.

The machine shop processing facilities consist of complete metal cleaning, treating, and plating installations, sandblasting equipment, liquid honing equipment, and a compact but versatile heat treating installation. These facilities are arranged in line with the normal flow of work through the machine shop.

". . . processing as well as machining is under the same supervisory control."

If a part requires sandblasting, honing, plating, or heat treatment before final finishing, it's a simple matter to route it through the proper processing facility without lost time, lost motion, or extra paper work. And there will be no questions concerning the type or quality of processing it must receive, because the employee handling the work is thoroughly familiar with the work and in direct contact with the other machine shop personnel.

One of the biggest advantages of this arrangement is that processing, as well as machining, is under the same supervisory control.

There is no division of responsibility in producing a single, high-quality component. If an employee in one of the machine shop processing departments doesn't understand exactly what is wanted, he has only to ask the departmental

Fig. 1—This simplified seven-tank hard chrome plating setup can handle all work originating from machine shop. Current for plating is supplied by the department's own rectifier.

". . . liquid honing provides an excellent bonding surface for dry lubrication of these parts."

foreman. Such an intimate exchange of information was impossible when our machine shop parts were processed by outside departments.

There is nothing revolutionary about the metal cleaning, treating, and plating facilities installed in the new Douglas machine shop. They are but smaller versions of similar equipment installed in the plant's general metal treating and plating departments. Equipment is available for cadmium plating, hard chrome plating, chemical nickel plating and electropolishing. A sulfuric anodic bath and a hard anodic bath are available for treating aluminum parts. Liquid honing and sandblasting equipment is included in this layout — both strangers to most machine shop installations. A small oven is available for reducing stress and embrittlement in cadmium plated parts. A single rectifier installation in a room adjacent to the processing facilities meets all current requirements. A refrigeration unit in the same annex provides refrigeration for the anodic baths. Solution control is under the direct supervision of the Process Engineering Department.

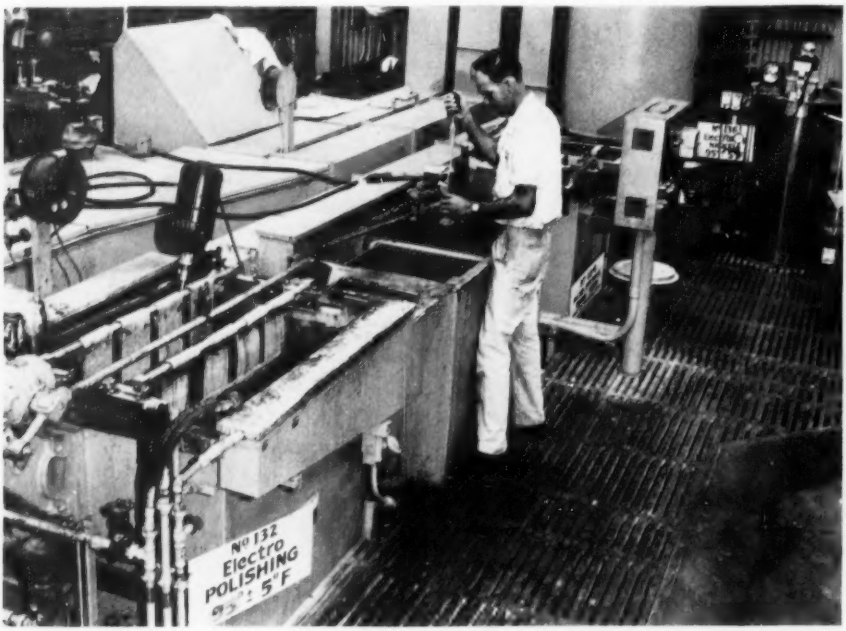

Fig. 2—Setup for electropolishing. This process brightens the work and provides excellent corrosion resistance. Nearly all of the stainless steel parts are electropolished.

The cadmium plating tank used in this machine shop processing department is 30 inches by 5 feet long by 4 feet deep. Practically all steel machine shop parts that will be exposed to air during their service life are cadmium plated. When the base metal of the part has been heat treated to 180,000 p.s.i. or over, the parts are relieved after plating in a small electric oven operated at 375 deg. F. The solutions used are conventional.

Capacity of the hard chrome tank is 750 gallons. This tank will handle 100 per cent of all parts that need hard chrome plating. The major portion of the work here consists of plating parts for airplane hydraulic systems, especially the piston components. Some salvage work is performed on parts that happen to be machined undersize. Also, when the machine shop work load is light, some hard chrome plating work is done for the plant Tooling Division.

Nearly all stainless steel parts are liquid honed. It was pointed out that liquid honing provides an excellent bonding surface for dry lubrication of these parts. Liquid honing is also used on parts that cannot be sandblasted because of critical dimensions. It is possible to remove heat treat scale from threaded parts by liquid honing without affecting the dimensions of the thread.

Fig. 3—Simplified cadmium plating installation can handle 90 per cent of all work originating in the machine shop. Cadmium plated parts are relieved after plating in a small electric oven.

". . . the chemically plated nickel has a low coefficient of friction."

Liquid honing is a method of blasting that uses fine abrasives suspended in water. This solution is ejected against the part from a pressure nozzle.

Electropolishing is used, not only to improve the appearance of the part, but to increase corrosion resistance. Nearly all stainless steel parts are electropolished. This is accomplished in a proprietary solution with a chromic acid base, operated at 175 plus-or-minus 5 deg. F. The time varies from 15 seconds to 20 minutes, depending on the part. The solution readily penetrates into crevices and onto hidden surfaces that could not be otherwise buffed or brightened.

Insignificant dimensional changes occur during this process, although it has been noted that prolonged treatment produces slight enlargement. Electropolishing demands heavy current concentrations, with 1,000-2,000 a.s.f. used for deburring, 500-1,000 a.s.f. for normal superfinishing, and 250-500 a.s.f. for descaling. Following treatment, the parts are rinsed for 5 minutes in water at 150 deg. F. The work is the anode in this process, and it must be rack-

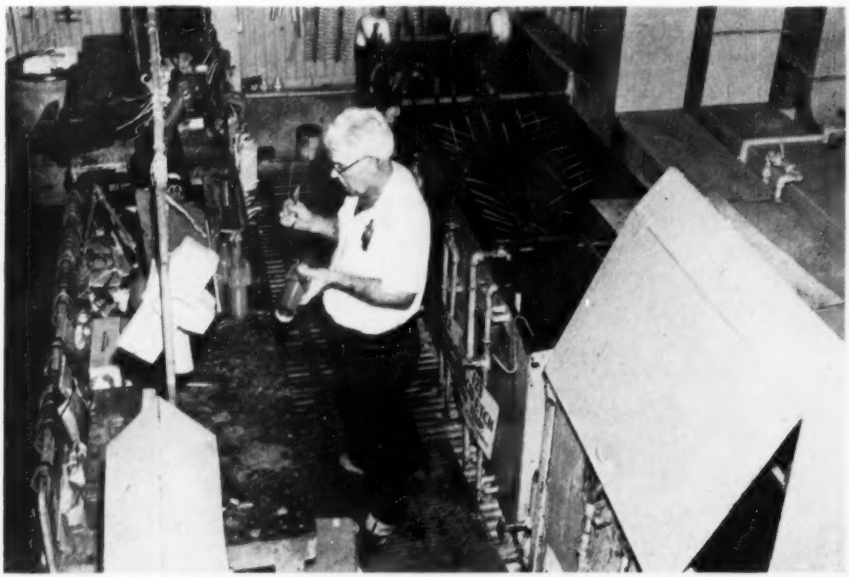

Fig. 4—Miniature-size equipment for sulfuric and hard anodizing aluminum parts produced in the machine shop. Hard anodizing is used on aluminum wearing surfaces. Hard anodizing solution must be refrigerated to keep it at about 20 deg. F. Refrigeration pipes can be seen at rear center. (Photos courtesy Torrance Plant of Douglas Aircraft Company.)

ed to obtain good electrical contact. **Chemical nickel plating** is used on parts for the airplane hydraulic system. This process is still in the experimental stages. The nickel deposit is drawn directly from the solution at a deposit rate of about 0.0005 inch an hour. Each solution can chemical nickel plate up to 10 loads, depending upon the plate thickness required, before it must be replaced with a new solution.

Wear resistance and hardness of the chemical nickel plate is not as great as that provided by hard chrome. Like hard chrome plate, the chemically plated nickel has a low coefficient of friction. On many parts chemical nickel plating is the only surface processing used; on other parts, the chemical nickel plate is used as a base for hard chrome plating. Solution temperature is maintained at 190 deg. F. The outstanding attribute of chemical nickel plate is its high resistance to the hydraulic fluids used in airplane hydraulic systems.

Set up as it is, the new Douglas machine shop could continue to produce 90 per cent of its quota if the remainder of the plant was shut down.

From a specific viewpoint, it would seem that departmental autonomy is needlessly expensive due to the necessary duplications of plant equipment.

Convenience, production speed, unified supervision to minimize errors of misunderstanding, elimination of paper work, material handling, and above all product quality must receive consideration as advantages that may more than offset the cost of duplicate equipment.

Instrument Checks Pore Structure Of Any Material

In the accompanying photograph, Gloria MacInnes, a secretary at Allegheny Ludlum Steel Corporation, inspects a new instrument which tests the pore structure of any material. This instrument, called the Porosimeter, is made by the American Instrument Company, Inc., of Silver Spring, Maryland. The Porosimeter can help in predicting the useful life of various products including metals, plastics, chemicals, textiles, leather, building materials, ceramics and others.

Low-Pressure Hot Spray Painting

By WARREN BEACH
President, Eclipse Air Brush Co.
Newark, N. J.

MUCH HAS BEEN SAID about the use of heat in spray painting and much more will be said. Any method that can eliminate the use of a gallon of thinner in every four gallons of paint, and provide other advantages as well, merits attention.

There are numerous advantages to be gained by using heated paint at low pressure without reducing the solids content. Less overspray and fumes are produced; less paint is consumed; fewer coats are required; less thinner is needed; a smoother finish is often produced; orange peel, sags and runs are less likely to occur.

HOT SPRAY EQUIPMENT being used to paint large piece of electrical equipment. (Photo courtesy Eclipse Airbrush Co., Newark, N. J.)

As an illustration of one of the advantages to be gained by using heat to reduce the viscosity of paint, consider the following example: we took some black lacquer that had a viscosity of 60 seconds in a No. 4 Ford Cup (70 deg. F.), and raised the temperature to 165 deg. F., the usual hot-spray temperature; the viscosity was reduced to 32 seconds; to bring the unheated lacquer down to 32 seconds at room temperature, however, required one gallon of thinner for every four gallons of lacquer; thus the use of heat eliminated one gallon of thinner for every four gallons of lacquer.

Heaters for both paint and atomizing air have been developed. Heated pressure tanks have been available for over twenty years. Heat has been supplied to pressure tanks by various means: steam jackets, electrically heated oil or water baths, electric immersion heaters; electrically heated strips on the outside of the tank. Each of these methods has had some disadvantage.

Heated tanks, though not explosion proof, are recommended for solid materials that must be melted and kept hot before they will go

through a hose. They are efficient and uncomplicated.

A modern hot spray system requires the usual components that any spray painting system requires, plus several special components. It requires a source of paint under pressure and a low-pressure spray gun. In addition, it requires a source of heat, a special fluid hose which will withstand heat, and a pump to circulate the paint between the heater and the gun, so as to keep the paint warm while spraying.

Recently, separate electrically heated units for low-pressure equipment have been developed. They are approved for use in explosive atmospheres. The simple flat heaters with a removable helix (scrole) around which the paint flows are easy to clean and maintain.

If the heater must be used more than 10 feet from the spray gun, it is usually desirable to use a circulating pump to keep the hot paint available at the gun all the time. A centrifugal pump is best for this type of service, since there are no close tolerances to be ruined by the abrasive effect of the paint. The spraying pressure is still supplied by a pressure tank.

Hot spray may be used to advantage with most types of organic finishes, including lacquers, vinyls, enamels, and many varnishes. It is particularly helpful for applying strippable coatings, where a heavy film thickness is required.

Hot spray equipment cannot be used in applying materials that polymerize with heat. Certain varnishes fall into this group. Heat is of only limited value in applying materials that are not reduced by heat, such as water-based paints.

For best results, it is wise to consult the paint supplier for a finish that will perform well with hot-spray equipment.

Hot spray is particularly valuable from an application standpoint, where plants are unheated in winter, such as steel fabrication and drum plants. Here the use of a heater eliminates the necessity of heating the paint prior to use and it also saves on thinner and improves the finish.

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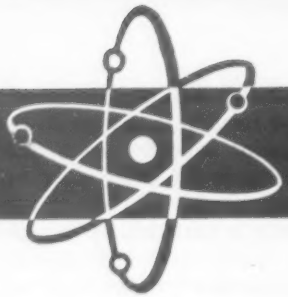
Chemical Surface Treatment of Titanium. By H. A. Pray, P. D. Miller and R. A. Jeffreys, of Battelle Memorial Institute. A report on research done for the U. S. Army Ordnance Corps. Available from Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C. (Order PB 111805). 43 pages. Price, $1.25.

Development of two chemical baths for coating the surfaces of titanium and its alloys to increase wear resistance is described. In the first, either heat-treated trisodium phosphate-fluoride or sodium-tetraborate-fluoride is used as a surface coating to provide continuous resistance for long periods of time. In the second, MoS_2 — Epon-resin is added to the heat-treated phosphate-fluoride or borate-fluoride to coat the surface and provide resistance against high-speed rotary wear under relatively high loads. Sodium tetraborate fluoride bath 242D gave the most versatile coating to all alloys tested and caused only slight pH changes. Another advantage was control and reproducibility of the bath. Both treatments proved valuable because they produced wear resistance at a temperature below that of any phase transformation of titanium alloys. Phosphate-fluoride coatings showed promise in wire and tube-drawing evaluations, and similar promise was expected of borate-fluoride coatings.



Electrochemistry

Part I

By FRED G. BRUNE
Quality Manager
Chrysler-Operated Naval
Industrial Reserve Aircraft Plant

PROGRESS AND IMPROVEMENTS result from learning more about a subject. Often it pays to learn more about the fundamentals before trying to make practical improvements in a process. For the electroplater this means learning more about electrochemistry.

In this article and succeeding installments principles of electrochemistry will be discussed. It is hoped that by trying to relate plating practices more closely to electrochemistry it will be possible to make even more rapid progress in the future than has been made in the past.

Electrochemistry was born when Volta discovered, in 1796, that two unlike metals in a salt solution produced a small electric current. Soon after the discovery of the voltaic cell, electric current was used to decompose water; thus began the science of theoretical electrochemistry. It paved the way for practical applications, including electroplating.

The Atom

All material substances are composed of atoms. Each atom consists of a small positively charged nucleus about which are swarming negatively charged particles called electrons. Since an atom as a whole is electrically neutral, the number of electrons around a nucleus must equal the positive charge on the nucleus. The chemical nature of an atom is determined by the charge on the nucleus. This charge is always an integral multiple of a fundamental unit which has an electrical charge equal to one electron. The number of charges in the nucleus of an atom is referred to as the atomic weight; hence the lightest element, hydrogen, has a charge on its nucleus of one, and thus an atomic weight of one. All other atoms have atomic weights that are integral multiples of this number. Oxygen, for instance, is 16. Uranium, a heavy element, has an atomic weight of 92.

The electrons that surround the nucleus, neutralizing the positive charge on the nucleus, revolve around the nucleus at different levels. Each succeeding level has definite numbers of electrons. Every level except the outer level has a full complement of electrons, and thus has no tendency to gain or lose electrons. The outermost energy level, however, does not have the number of electrons necessary to

and the Plater

make a complete level. The electrons in this level, or orbit, are called valence electrons. It is in this level that electrons are gained, lost, or shared during chemical reactions.

Different atoms, however, exert different forces on their valence electrons. These forces determine the relative activity of the atom. A study of these forces resulted in the electromotive series, which lists the metallic elements in order of decreasing tendency to lose electrons. A part of this list is shown below:

Sodium
Aluminum
Zinc
Chromium
Iron
Cadmium
Nickel
Copper

From this series we can predict which element will replace another from a solution. Zinc, for example, is above copper in this series. This means that zinc is more active than copper, and therefore it should replace copper from a solution; thus when zinc is introduced into a solution of blue copper sulfate, the zinc replaces the copper, forming a colorless solution, and the copper precipitates as an insoluble material.

Ions

As mentioned previously, each atom has a tendency to gain, lose or share electrons in order to complete its outermost energy level. This is natural, for the completed energy level or orbit is the most stable form. An example of sharing electrons to complete the outermost energy levels of two elements is

FRED G. BRUNE has been active in the plating industry for more than 25 years. He attended the University of Cincinnati as a cooperative student in the Department of Chemical and Metallurgical Engineering. He has been associated with the Lockland Div., Electric Auto-Lite Company and Marion Industries, Division of Motor Products Corporation. For the past several years, he has held a staff position at Chrysler Corporation.

Mr. Brune is a past-president of the Cincinnati Branch, American Electroplaters' Society. As a member of the Detroit Branch, he gave a most successful course in Electroplating last year. Mr. Brune is a member of the Electroplating Course Committee of the A. E. S.

"A solution containing ions will carry electric current, and metal can be deposited from it."

solid nickel chloride. Here one atom of nickel and two atoms of chlorine share two electrons to form a molecule with a balanced electrical charge. When this molecule is dissolved in water, however, it dissociates; that is, the nickel loses two electrons and thus has a positive charge. In this state it is referred to as a nickel "ion." Similarly, the two atoms of chlorine each gain an electron, and hence each of these has a negative charge. The chlorine atoms in this state are also ions. Thus an ion is an atom that has either gained or lost one or more electrons. Since opposite charges attract, the positively charged ions will move to the negatively charged cathode in a plating bath; therefore, they are called cations, while the negatively charged ions, which are attracted to the anode, are called anions.

When an ion reaches an electrode, the ion gives up its charge, or gains electrons, as the case may be, and it is deposited as an ordinary atom. A positively charged nickel ion is attracted to the negative electrode, or cathode. Upon reaching the electrode it gains or shares two electrons and thus is deposited as ordinary nickel.

Of interest to us is the fact that when we dissolve chemicals, or "salts" as we call them in the plating trade, in water to form a solution, something happens to improve the degree of conductivity. That is, a metal salt solution will carry increased amounts of electric current; but even more amazing is the fact that the change in properties of the solutions leads us to the conclusion that there are more molecules, or smaller particles acting as molecules, than can be accounted for by the amount of salt added. This indicates some type of decomposition of the crystalline structure. These outer or valence electrons of the elements provide this electrolytic conductance. This condition of the atom is spoken of as an "ion," mentioned above.

One of the confusing conventions of electrochemistry is that the flow of electrons is in one direction, while the electric current flows in the opposite direction (Fig. 1). In discussing plating it is best to think

Author's Note: *This material was used in a lecture course in Electroplating, given as a part of the educational program of the Detroit Branch, A. E. S. The lectures were designed to explain in simple terms the principles of electrochemistry, and demonstrate to the plater the usefulness of these principles. During the course each student was given a copy of "Fundamentals of Electrochemistry and Electrodeposition," by S. Glasstone, as a source of more extensive explanation of electrochemical principles.*

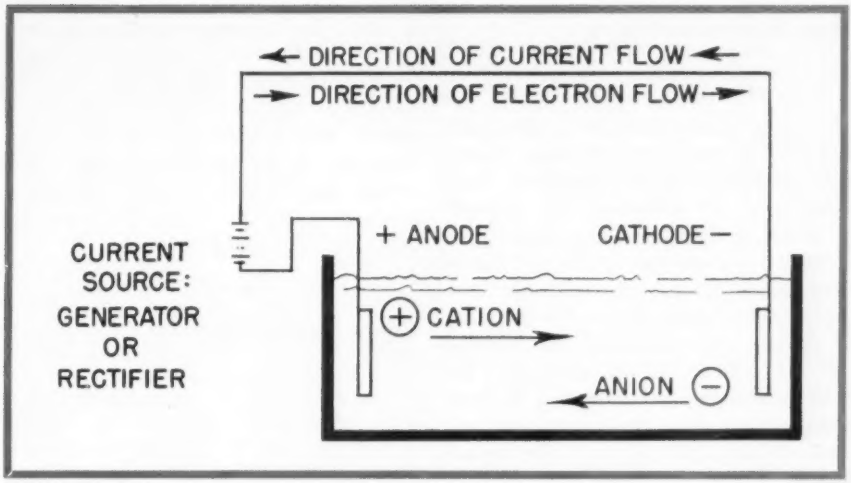


Fig. 1—Drawing shows the relation between current flow and electron movement, anions and cations, anode and cathode. Ions carrying a positive charge move in the direction of the electric current toward the cathode. They are called "cations." Those carrying a negative charge move in the opposite direction and are called anions. To illustrate: a positively charged nickel ion travels toward the cathode, where it gains or shares two electrons and is deposited as ordinary nickel. Note from the diagram one of the confusing aspects of electrochemistry: the flow of electrons is opposite to the flow of current.

in terms of negative and positive charges rather than in terms of electron movement.

A solution containing ions will carry an electric current, and metal can be deposited from it; therefore, the presence of ions in a solution is very important to the plater. Ions were named by Faraday, who assumed that the flow of electricity through a solution was associated with the movements of particles carrying either positive or negative charges. Faraday thought of the Greek word ion, meaning "wanderer" and applied it to these particles.

While the conception of the ion as a wandering particle not attach-

Acknowledgment: *The author's interest in promoting education in the electroplating field was stimulated by Dr. R. O. McDuffie, head of the Department of Metallurgical Engineering, University of Cincinnati, and the late Dr. Carl Heussner of Chrysler Corporation. Both men taught that the future of the plating industry is dependent upon the achievement of higher levels of education and more precise control. Both men helped provide inspiration for the author's course in Electroplating.*

ed to any other particle is the normal way to consider solutions, there is in reality a good possibility that these ions are solvated, i.e., joined by covalent bonds to the molecules of water (or solvent). Platers have long talked about the hydrogen ion and checked the pH of the plating solution as a measure of the hydrogen ion concentration. However, in acid solutions particularly, it has been shown that the hydrogen nucleus is attached to a molecule of water. Thus the hydrogen ion is generally thought to exist mainly as the "oxonium ion" $H(H_2O)+$ or H_3O+. It is not necessary for us to refer to the oxonium ion in discussing plating, since the term "hydrogen ion" is adequate to explain phenomena associated with plating; but it is well to understand that the hydrogen ion is usually combined with a molecule of water in plating from aqueous solutions, or to a molecule of another solvent in plating from an organic solution.

Periodic Table

As mentioned previously, each element has a different charge on its nucleus, which is always an integral multiple of a fundamental unit equal to the charge of one electron. This integer is known as the atomic number, and it generally increases with increasing atomic weight. A Russian chemist, Mendeleeff, in 1869 stated that "the properties of the elements are periodic functions of their atomic weight," and gave us what is known as the Periodic Table. About 1914 it was discovered that the atomic number is the more fundamental property, and since that time this has been the basis for classification of the elements. The Periodic Table is of assistance in determining which elements are likely to have common valence and in predicting which have similar properties.

★ ★ ★

THE FINISHED TOUCH. A movie recently announced by **Sprayon Products, Inc.,** features one of the newest facets of the paint industry. It presents interesting, entertaining information on aerosol-packaged paints, how to use them, why they work, where they are used and so on.

The film is available at no charge. Booking can be arranged by writing to B. W. Payne, **Modern Talking Picture Service,** 1008 Superior Ave., Cleveland 14, Ohio.

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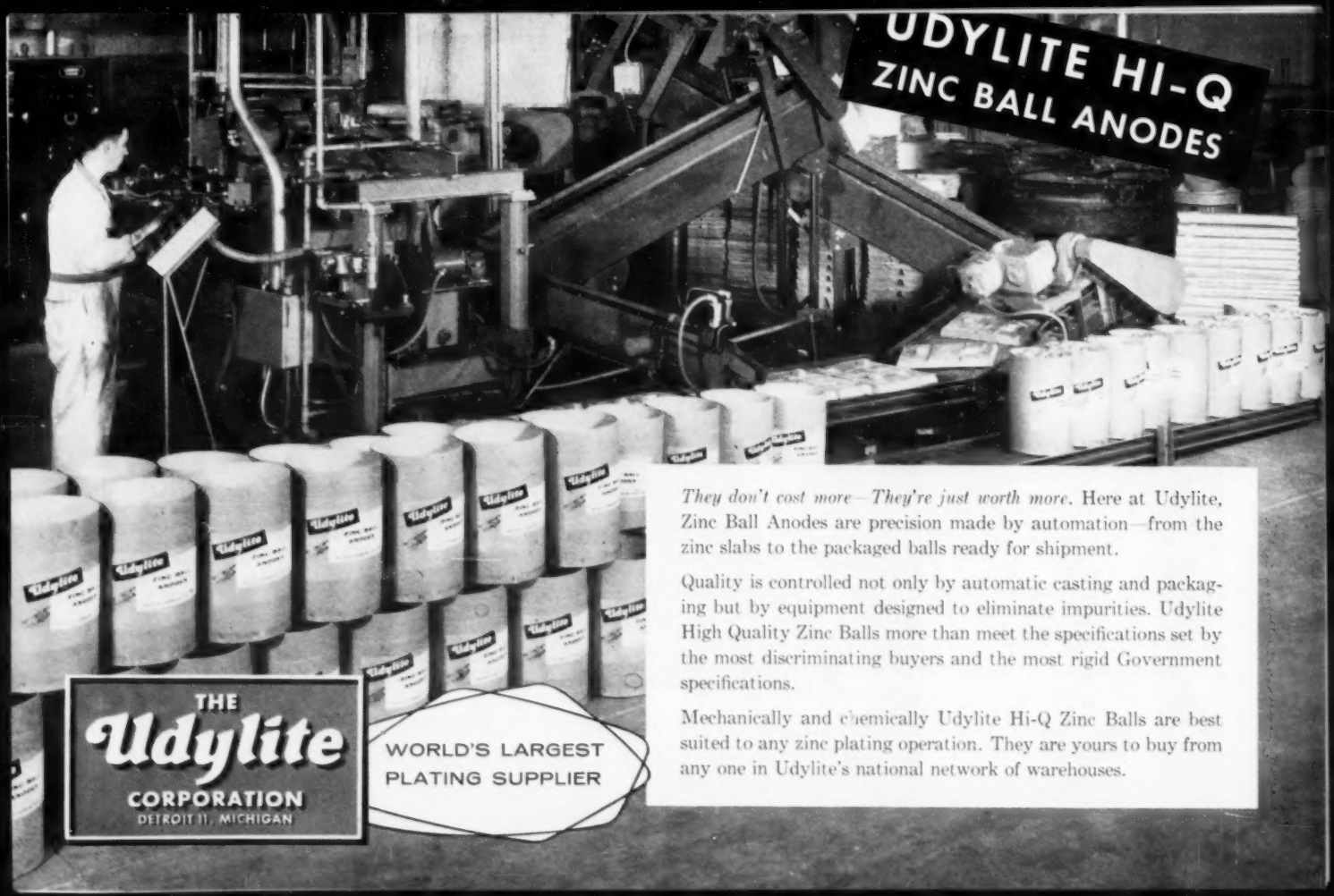
For eighteen minutes, viewers follow a "Man on a Skyhook" through a fantastic Dali-dream of form, color and texture in a myriad of hues. The movie portrays today's practicalities and tomorrow's possibilities of design with the light metal.

Especially contrived to illustrate aluminum's versatile color and texture possibilities to designers, architects and engineers, the movie shows appliance, architectural, automotive, apparel and purely artistic applications in every color of the spectrum. Textured finishes range from brush effects to craggy pebble designs.

The film is in 16 mm. sound. Organizations desiring to borrow it should write Motion Picture Section, **Aluminum Company of America,** 1501 Alcoa Building, Pittsburgh 19, Pa.

For more data on advertisement on opposite page, circle **323** on Reader Service Card——→



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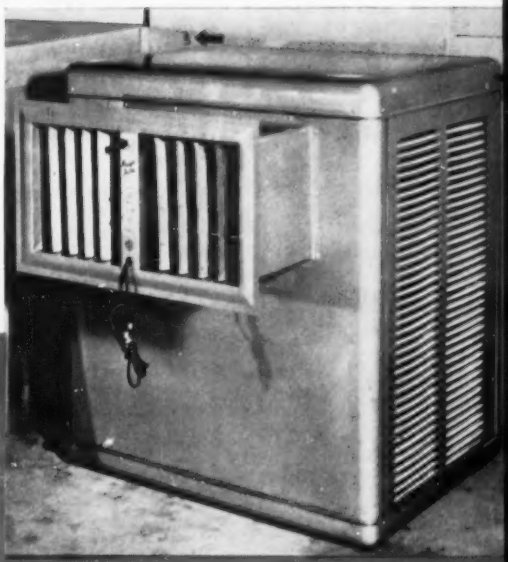
GALVANIZED SHEETS of Wheeling Corrugated Company's Cop-R-Loy Softite are used to fabricate cabinets for Magic Aire cooling unit. Galvanized finish permits stamping of cabinet elements without cracking or distortion. Parts are then sprayed with enamel and baked for 20 minutes at 350 deg. F.



VINYL PLASTISOL coating forms slip-resistant hand grip for floor-polishing equipment. Handles are dipped into the plastisol, then cured in oven to form the hand grip. Besides making a good hand grip, the plastisol also serves as a protective covering to keep the handle from scratching furniture or floors. Plastisol was supplied by Stanley Chemical Co., East Berlin, Conn., and applied by Coatings Engineering Co., Natick, Mass.

GRAY ANODIZED ALUMINUM "skin" was used on Thalhimer's Department Store, Richmond, Va., to cover a city block of old buildings of assorted styles and sizes.

VARIOUS COLORS of special-formula porcelain enamel brighten interiors of this 1957 Kelvinator upright home freezer. The exterior is finished with Permalux baked enamel.

Here's an aluminum ...reduces maintenance costs...

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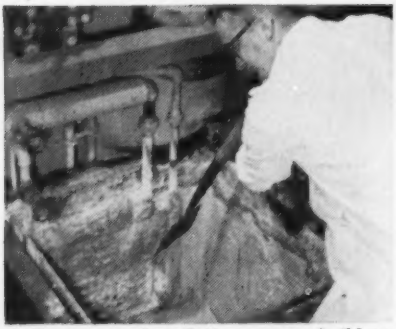
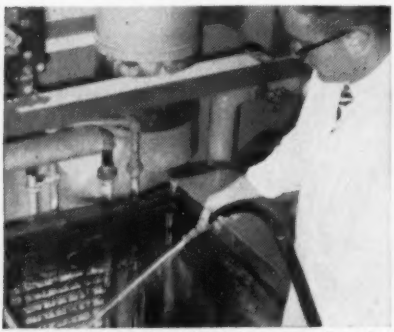


Ordinary caustic solution causes build-up of scale on tank interior. Scale must be chipped off frequently.



New Wyandotte Mil-Etch suspends dissolved aluminum in solution. No scale develops throughout entire life cycle.

Here's a brand-new caustic-type aluminum etchant that eliminates expensive shutdowns, needless maintenance and labor costs. Mil-Etch keeps dissolved aluminum in solution—prevents it from forming a hard scale that must be chipped from tank walls.

Etches rapidly and uniformly. Economically concentrated, Wyandotte Mil-Etch produces an attractive, uniform, high-quality etch in only a few minutes on aluminum extrusions, wrought sheets and bar stock. You can also use Mil-Etch for deep etching or chemical milling of aluminum alloys.

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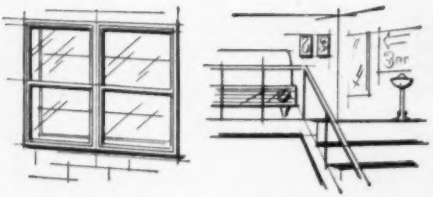

etchant that eliminates scale produces a bright matte surface

ETCH !

will not cake in drums; also, no excessive foam or fumes. You can use a tank of Mil-Etch until it becomes "loaded" with dissolved aluminum. Tank dumping is simple – just pull the plug!

Desmutting. For brightening aluminum alloys that turn dark in alkaline etching processes, try Wyandotte 2487. It is safer than ordinary acid solutions, and permits a closer control of the desmutting bath. Being in easy-to-handle granular form, solution make-up and additions are simple.

For full information on how new Mil-Etch and Wyandotte 2487 will solve your aluminum-etching problems, call your Wyandotte representative.

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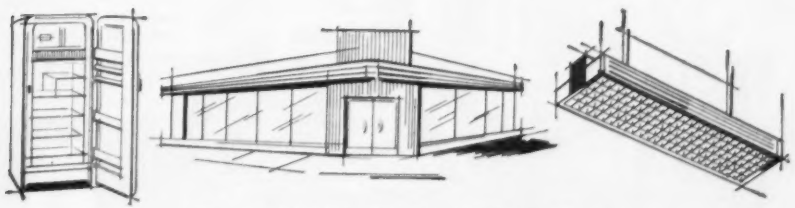

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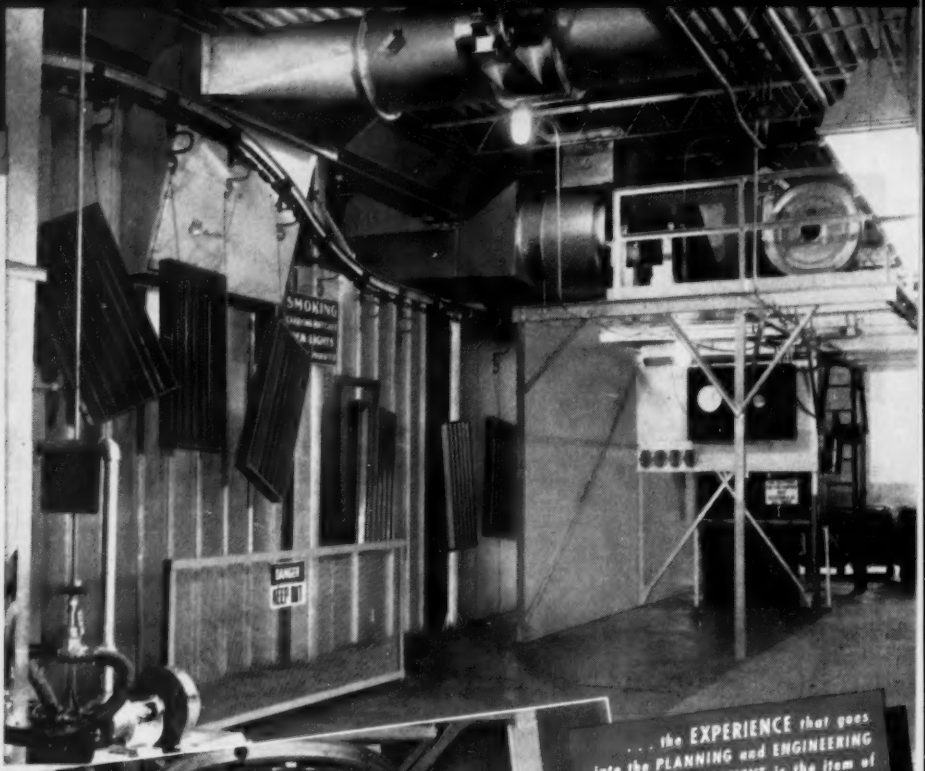

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Directly above is a General View of the Complete, Conveyorized Mahon Finishing System recently installed in the Airolite Company's Plant, Marietta, Ohio. It shows an Oven Heating Unit and the Control Cabinet which houses the Temperature Recorder, Automatic Controls and Safety Devices. The Ventilated Solvent Vapor Chamber is visible at the left.

Loading and Unloading Stations in the Complete Mahon Finishing System in the Airolite Plant. Processing is Automatic and Continuous.

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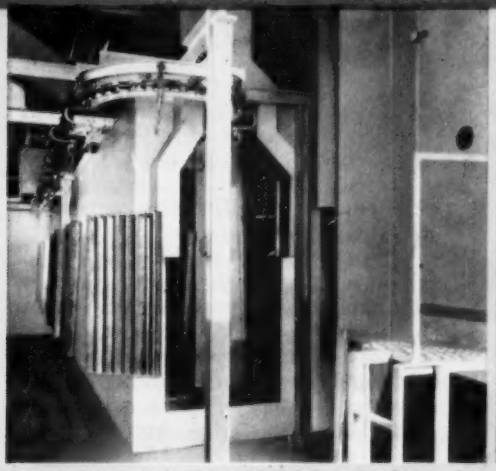
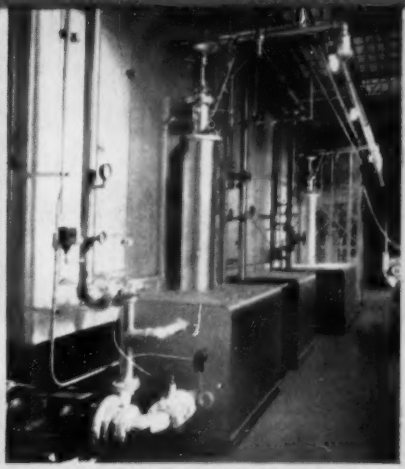


Exit Opening in the Mahon Dry-Off Oven. This Oven and the Paint Baking Oven are Combined and Built as One Unit.



Partial View of Mahon Five-Stage Metal Cleaning and Bonderizing Machine in the Airolite System.

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AHON

Redesigned Silvering Line Boosts Mirror Production

By L. J. ESSER
Assistant Manager,
Glass Division,
T. C. Esser Paint & Glass Co.

A redesigned conveyor-spray system incorporating two new eight-foot spray booths has helped to increase production of mirrors at the Glass Division of T. C. Esser Paint & Glass Co.

The improved spray and exhaust facilities on the production line are coupled with an infra-red baking oven and a continuous conveyor system that carries the mirrors through various stages of the operation. Binks Manufacturing Company, Chicago, engineered and installed the spray and exhaust equipment in collaboration with company engineers.

The Binks spray booths are large enough to permit handling mirrors up to 80 inches wide. Maximum width of the mirrors handled with the previous spray facilities was 60 inches. The use of larger glass sheets has resulted in better planned sizing, thereby reducing cutting waste. Larger pieces also mean less handling. An overall production increase of 50 per cent is attributed to the revamped line.

Preparations to send the sheets of glass on their way through the production line begin by thoroughly washing each sheet with warm water.

Workers then carefully inspect the glass and remove any scratches or hair lines by scratch polishing and blocking. To do this, they apply cerium oxide solution to the affected area, and remove it by careful manipulation of vertical and horizontal polishing wheels.

After the glass sheets have been thoroughly dried with an ammonia-dampened cloth, they are loaded on dollies or trucks and moved into the silvering room, which is separate from the rest of the shop. Special precautions here keep the air free of dust and other impurities that might be injurious to the silvering process.

The first step in silvering is sensitizing. Operators spray a tin chloride solution over the back, or silver side of the glass. This tin coating is an essential bonding agent, as the silver film will not adhere to glass directly.

After sensitizing, the glass sheet moves into a Binks Dry Floor-Type spray booth. Sprayers coat the mirror with liquid silver, which gives it reflective properties. It is this process that actually makes the glass into a

mirror. While this operation is taking place, the glass is rested on and against the back panels of the booth. As the spray painters apply cold spray solution of liquid silver, the mirror's vertical position provides a gravitational pull that keeps the silver flowing smoothly and evenly across the glass from top to bottom.

The Binks booth has distributing plates that equalize the flow of air and provide a uniform draft. The exhaust is at the rear of the booth. Suction is supplied by a large fan mounted in the center. All overspray is quickly sucked into the ducts and exhausted to the outside.

In this same booth, painters apply a thick coating of copper over the silver, which prevents oxidation of the silver while the mirror moves on the conveyor to the next spray booth.

The second booth is a Binks Standard Dry Type Down Draft model. Here workers apply a heay coat of protective copper to permanently

Fig. 2—After sensitizing, glass is placed in vertical position in Binks Dry-Type Spray Booth. A cold spray of liquid silver is applied here, giving mirror its reflective properties.

Fig. 1—One of the first steps in silvering process is sensitizing. Worker is spraying tin chloride solution on back or silver side of glass. This coating bonds silver to glass.

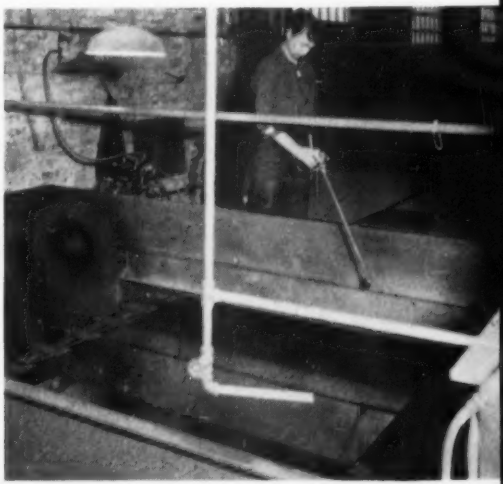

Fig. 3—Final coating of copper being applied in Binks Standard Down Draft Booth. Worker uses Binks Model 19 gun with a nozzle extension. Copper coating serves as protection.

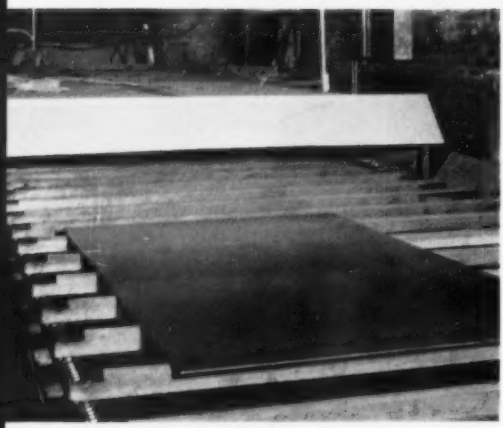

Fig. 4—After leaving second spray booth, mirror moves on the conveyor into an infra-red oven, which bakes the coating at 175 deg. F. for 10 minutes. The mirror is shown as it emerges from the baking oven.

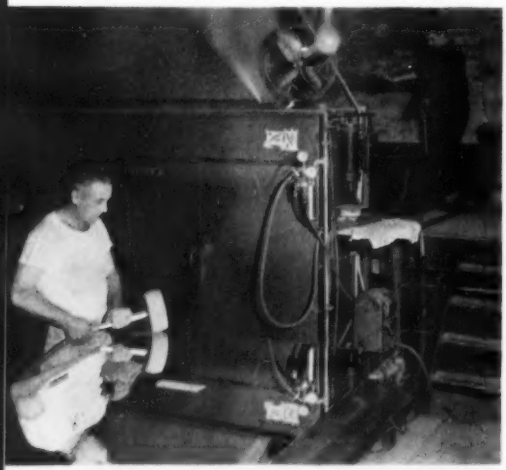

Fig. 5—Worker uses air-operated buffing machine to clean edges of a new mirror. Binks Dry-Type Down-Draft Spray Booth used in applying the copper backing is in the background. (Photos courtesy Binks Mfg. Co.)

guard the mirror against silver oxidation. The nonporous nature of the copper film prevents oxidation and other chemical reactions that would tarnish the mirror.

As the mirror moves through the booth on a horizontal slat conveyor, a worker sprays copper solution on the mirror back from a platform over the conveyor. A Binks model 19 spray gun with a three-foot nozzle extension enables the operator to keep the nozzle at the optimum spraying position over the piece without bending down from the platform. Because the mirror is in a flat position, the copper builds evenly to the required thickness instead of running off the edges.

The vertical air movement of the down draft exhaust, located at the side of the Binks booth, carries the copper overspray away from the operator. All waste material is pulled down and toward the end of the booth, where it is exhausted to the outside.

From the horizontal spray booth, the mirror continues on the conveyor into a long, low infra-red baking oven. The mirror travels through the oven in about ten minutes. The coating is baked on at a temperature of 175 deg. F.

At the end of the conveyor the mirror is moved to a felt-top table for final cleaning and polishing. It takes an average of 30 minutes to transform an 80-inch glass sheet into a mirror.

The final step is cutting the mirror to size. In addition to cutting machines, an automatic beveling machine equipped with diamond points is employed to bevel the mirror edges if specified. The mirrors are then ready for packing and shipment.

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Aircraft Parts Manufacturer Improves Cadmium Plating

Faster, more durable cadmium plating of aircraft components has recently been achieved by the Breeze Corporation, Union, N. J., according to Ray Heartel, chief metallurgist at the company.

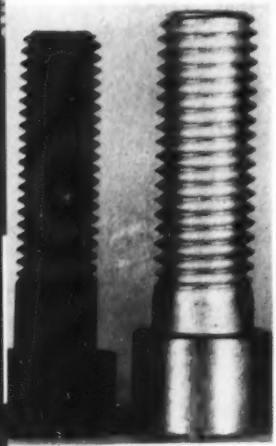

Fig. 1—These bolts show contrast of plated and unplated part. Bolt on left is not plated. Bolt on right has been cadmium plated with Cadmax bath. Breeze Corporation reports that Cadmax process produces excellent deposit uniformity.

Fig. 2 — Breeze Corporation employees are shown as they "overhaul" a cadmium plating bath. Fresh solutions of cadmium plating solution are added once every three weeks.

Cadmium-plated parts are being produced with a "much higher brilliance than we've been able to obtain in the past," Mr. Heartel says, and with a "faster, more uniform cadmium deposit—and a minimum of fingerprinting and staining of work."

In addition to these production improvements, Breeze has increased the ability of its cadmium-plated components to stand up under quality-control tests for corrosion-resistance, durability, plate thickness and uniformity, stress and strain.

Primarily engaged in the production of engine parts for both military and civilian aircraft, Breeze Corporation manufactures actuators, hoists and winches, starter-generators, slip rings, radio shielding, electrical connectors, flexible metal tubing, conduits and fittings, aircraft junction and relay boxes, windshield wipers, and mobile ground handling equipment.

About a year ago, the company began using a concentrated liquid brightening agent. The brightener, "Cadmax," marketed by the Federated Metals Division of American Smelting and Refining Company for barrel and still cyanide cadmium plating, is added to Breeze's 500-gallon cadmium baths every three weeks. A half-pint diluted with a pint and a half of water is added.

After painstaking cleaning and plating operations, Breeze cadmium plated parts are subjected to strict quality control tests: one unit from each batch is extensively tested for corrosion-resistance and durability. It is exposed to salt-water spray and high temperatures that simulate, in a few minutes, extreme weather conditions.

The part is then placed under a burette containing a solution of sulfuric and chromic acids. This solution is dropped on the part at the rate of about 100 drops per minute. The

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Fig. 3—Cadmium plated aircraft engine manifold being removed from plating bath. This part is taken out so that it can be tested for corrosion resistance and durability.

thickness of the plate is measured by the time it takes for the acid to eat through the cadmium.

A stress-and-strain test in which the component is gradually heated to 180 deg. F., bent, and measured for plate-flaking, completes the series.

The brightener that helps Breeze in its cadmium-plating operation, liquid "Cadmax," produces a bright blue-white deposit over a wide range of currents on all types of alloys. It is a low-foaming agent. "Cadmax" will not burn, even when the cadmium content of the plating bath is low. It produces excellent results in baths of low nickel content. It contains nothing that can produce breakdown products or organic impurities in the cadmium plating bath, the manufacturer reports.

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★ ★ ★

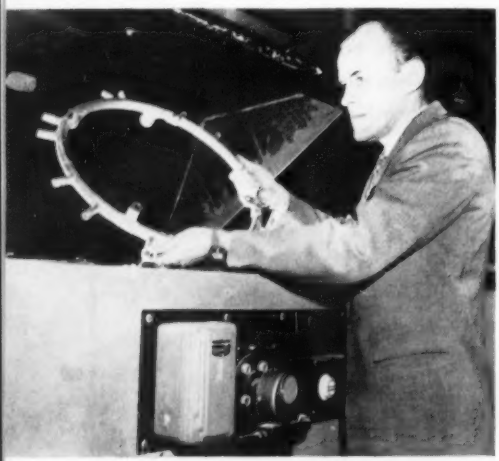

Fig. 4—Aircraft manifold selected for testing is placed into salt-spray chamber. Manifold is subjected to high temperature as well as high-pressure salt water spray in this cabinet. (Photos courtesy Federated Metals Div., American Smelting & Refining Co., New York, N. Y.)

Nylon Coating Process Used to Coat Steel Curtain Carriers

Steel curtain carriers are being nylon coated by Lehigh Research and Development Corporation, Allentown, Pennsylvania, using the recently developed Whirlclad process. This method of applying a coating is licensed from Polymer Processes, Inc., Reading, Pennsylvania.

The curtain carriers, which slide along an aluminum track, are coated with wear-resistant nylon to prevent metal galling and scraping. The low-friction nylon surface also reduces noise. This is important in the operation of stage curtains.

The Whirlclad coating process consists essentially of dipping a preheated object into a bed of finely divided dry coating powders, fluidized by ascend-

A Timely Message on

Man's Mastery Over Shortages

by Ben P. Sax

Chairman of the Board, American Buff Company

Virtually wherever and whenever man has felt the pinch of scarcity, human ingenuity has produced some method or product to counter-balance the specific need. Whether the shortage problems were those of time, materials or skills—even rainfall—man has created astounding systems to surmount the situation.

Impossible only a few short years ago, many "miracles"—even cloud-seeding—now arouse little excitement and are accepted as daily routine. Yet they are responsible for bringing yesterday's luxuries into everyday availability.

For example, the world's great dams produce gardens from barren soil, nourish and support millions of men and animals. Fast freezing conserves and permits distribution of life-giving goods, medicines, blood plasma. The need for immediate knowledge spurred the developments of electronic "wizards" which compute faster and more accurate than man can comprehend. Supersonic transportation establishes invisible highways throughout the known and unknown worlds. Automation makes a single human being the master of an intricate mechanical monster which can, without error, out-produce thousands of men and free them for new and more satisfying tasks.

In our own metal finishing industry, new types of buffs have created new peaks of production, using existing equipment with fewer workers—making possible greater output with lower unit costs. Today is but the preliminary step in an ever more marvelous world of man's victory over shortages.

Sincerely.

Ben P. Sax

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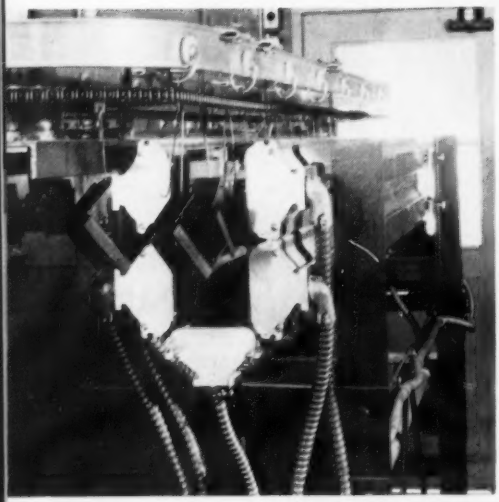


Fig. 1—Curtain carrier parts traveling through a Wiegand Chromalox radiant oven. Here the parts are preheated in preparation for dipping into the bath of fluidized nylon.

ing currents of gas or air in specialized equipment. The parts to be coated are preheated above the melting point of the coating powders, and the powders fuse onto the surface of the part. The object to be coated must have a higher melting point than the coating powders.

The process was invented in Germany by Knapsack-Griesheim under the term "whirlsintering." Patents have been issued in Germany, France, Italy and Great Britain, and are pending in the United States. Polymer Processes, Inc., has obtained exclusive United States patent and license rights.

Lehigh Research & Development Corporation preheats the steel carriers on a continuous conveyor that carries the parts between five Chromalox ra-

Fig. 2—Steel carrier part being dipped into Whirlclad fluidized coating material at Lehigh Research and Development Corporation.

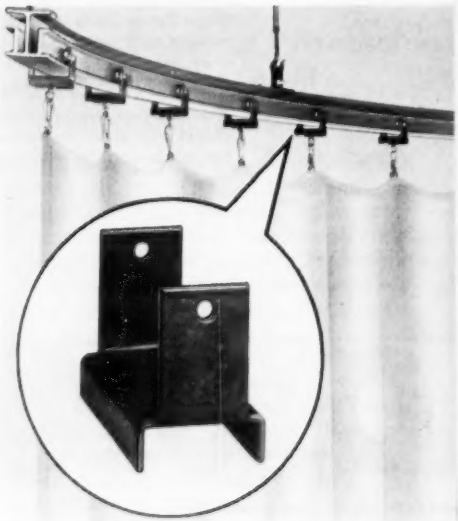
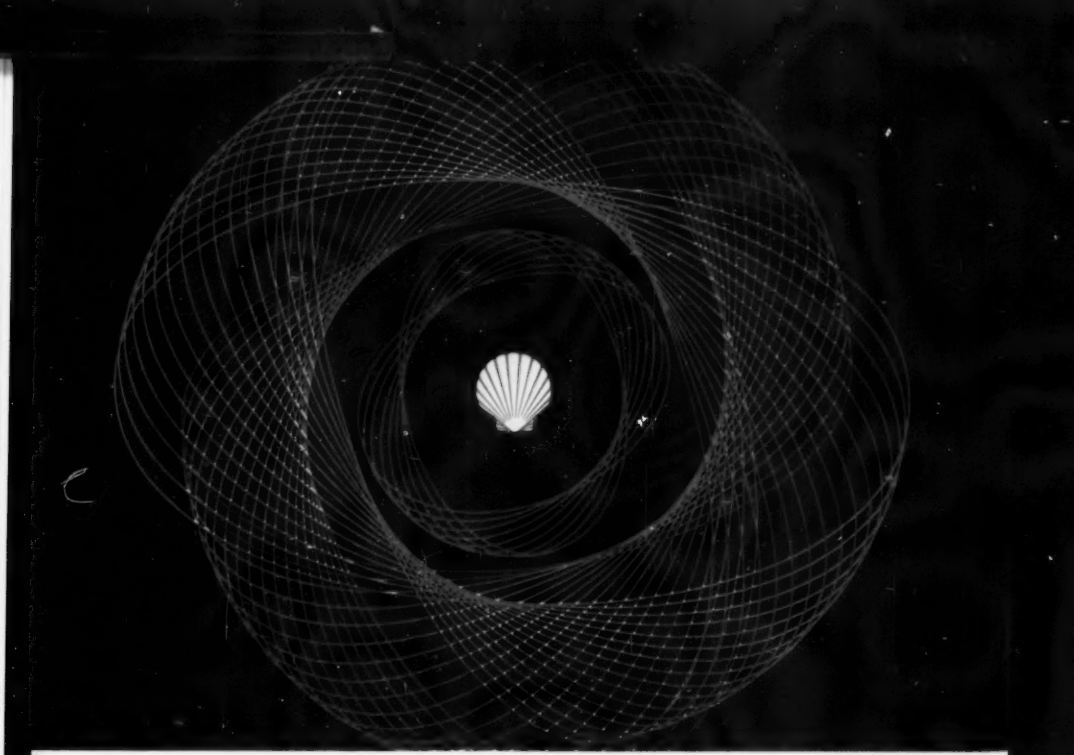


Fig. 3—Nylon-coated carriers are shown in use, supporting a curtain. (Photos courtesy Polymer Processes, Inc., Reading, Pa.)

For more data on advertisement on opposite page, circle **329** on Reader Service Card——————→



"Integration," an impression by C. Arthur Rosser

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- Ethyl Amyl Ketone
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- Neosol® Solvent
- Isopropyl Alcohol
- Methyl Isobutyl Carbinol
- Hexylene Glycol
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- Handle Finishes
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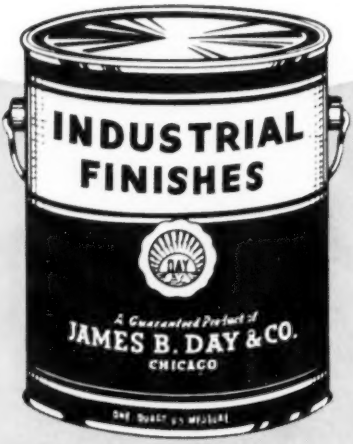
- Stains

FINE FINISHES SINCE 1906



Write us about your needs

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diant heater units. The parts are then removed from the conveyor, dipped in the Whirlclad coating tank, and placed on a rack to cool.

Using the coating material in dry powdered form results in a uniform coating unmarred by irregularity in material flow, or flow from sharp corners. A coating of 0.01 inch is obtained in a single dip.

The coating powders used are known as Whirlsint nylon powders. The powders are specially processed to provide satisfactory adherence and mechanical properties.

For more data circle **3** on Reader Service Card

★ ★ ★

How to Reduce Waste in Rinsing Operations

Profit losses on rinsing operations are unnecessary—so says O. H. Tiedemann, general manager of Wagner Brothers' plating equipment division. Mr. Tiedemann points out several ways that these losses can be reduced —among the most important of which is to make use of devices which provide better control over rinse water purity and consumption.

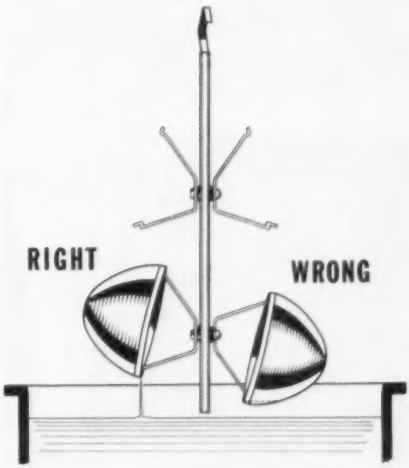
Most large, high-production plating equipment, he explains, is designed and built for a specific type of plating work—so that rinse consumption can be estimated with reasonable accuracy, and proper control methods built right into the equipment.

On smaller, job-lot operations however, conditions vary so much and so often that efficient rinse control measures are considerably more difficult.

"In spite of these difficulties, many control measures can be successfully applied to help reduce rinse losses," says Mr. Tiedemann. As an example, he cites the case of one company which reduced rinse water consumption more than 700 per cent on one rinse tank with a simple control unit that measures the relative contamination in the tank, and automatically adds sufficient water to maintain the desired rinse tank purity.

Such a device not only saves considerable money by cutting water usage; it tends to cut scrap losses and improve plating quality in the all-too-frequent cases where water valves are manually over-throttled to reduce consumption.

Several other methods are also suggested by Wagner engineers to reduce water consumption during plating operations. Proper racking and cycling aid in allowing parts to be adequately drained over the plating tank so that they do not carry too much plating solution into the rinse; use of reclaim tanks, where space is available and production volume justifies it, lowers the water volume required for efficient



Proper racking of plated parts saves rinse water consumption by permitting all excess plating solution to drain off over the plating tank (left, above), rather than to hold excess solution (right), and carry it into rinse tank.

←———For more data on advertisement on opposite page, circle **330** on Reader Service Card

rinse. Fog spray tanks are often preferable to reclaim tanks for after-plating rinse. They furnish a constant, non-contaminated rinse. A straight spray rinse, rather than a dip rinse, is usually more effective on complicated parts, and with plating solutions which do not rinse easily.

"Proper rinse control—an important job today—will grow even more vital as existing water tables recede, and the demands for water exceed the capacity of available pumping equipment," Mr. Tiedemann concludes.

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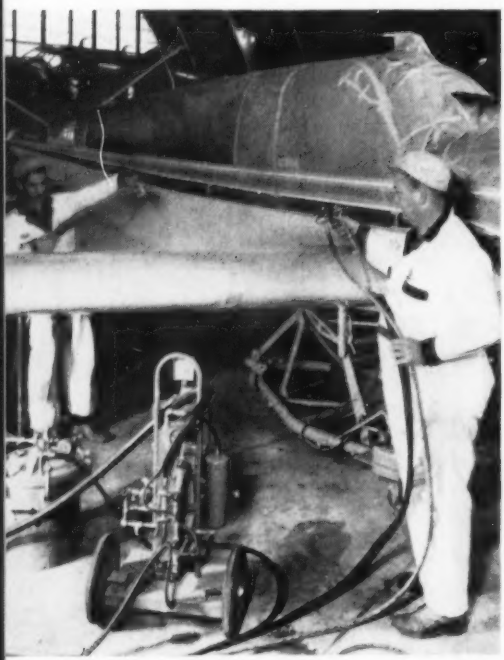


DeVilbiss Portable Paint Heater being used to refinish an airplane at the Ohio Aviation Company, Dayton, Ohio. (Photograph courtesy The DeVilbiss Company, Toledo, Ohio.)

Portable Paint Heater Aids in Aircraft Refinishing

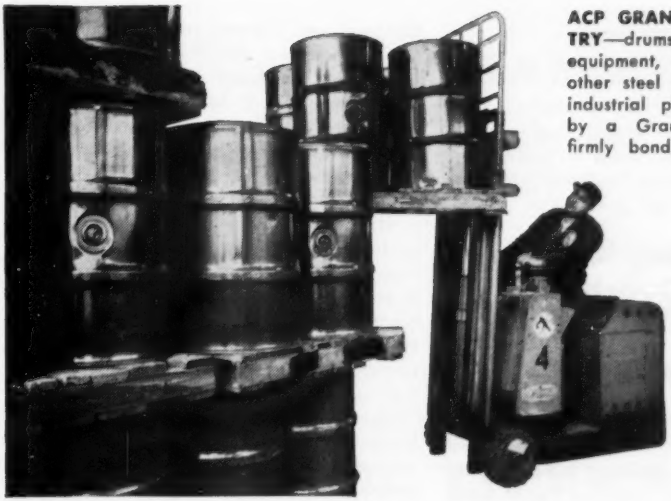
Ohio Aviation Company at Dayton Municipal Airport in Vandalia, Ohio, has complete overhaul facilities for airframes, engines, propellers, instruments, hydraulics, and sheet metal, as well as a complete radio and electronics department and upholstery shops for aircraft interiors.

One of the services for which the firm is noted is its aircraft refinishing. The operation is much like that of any other good paint shop. A plane is first stripped of all existing paint and primer, cleaned and etched, masked, and a coat of primer is applied. This is followed by painting in the customer's choice of color and design. Such a paint job will last from three to five years, depending on the care exercised by the owner and whether the plane is kept in a hangar or outside in the weather.

Ohio Aviation has cut painting time and achieved better paint jobs by using a DeVilbiss portable paint heating unit. When the heater was brought in for trial some months ago, the shop was about to finish the lower fuselage section of a Lodestar. The area sprayed with the heater indicated a better job, took less time and used less paint.

Experience since has shown similar savings in time and material because the "hot spray" method results in finer atomization of heavy material and reduces overspray.

Ohio Aviation has found portable equipment to be most suitable for its operations. There is no necessity of filling cups; with only the gun to handle it is easier to get into tight places; the painter's arm doesn't get tired from the weight of the cup; maintenance is at a minimum. To keep maintenance low, the company insists on keeping the equipment clean. The



ACP GRANODINE IN INDUSTRY—drums, materials handling equipment, and a great many other steel products throughout industrial plants are protected by a Granodine base which firmly bonds the paint.

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ACP Granodine firmly bonds the paint finish on many steel products used in industrial plants, giving them lasting protection by converting the surface to a nonmetallic phosphate coating. This chemically deposited film greatly increases the adhesion of the finish and also provides high corrosion resistance—even when used in conjunction with a relatively thin and flexible paint film.

LEARN MORE ABOUT ACP GRANODINE. Bulletin 1380 describes the various types and gives information which will help you select the proper one for your particular application. Write for your copy today.

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painters can clean the complete DeVilbiss equipment—guns, hoses, tank and heater—in less than 30 minutes.
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★ ★ ★

Brush Plating Used in Propeller Overhaul Program

Plating large, hollow, steel propeller blades for the giant B-36 airplane includes an interesting production technique for finishing the area around a three-inch hot-air deicing vent hole built into the tip of each blade. Because this hole must be plugged to prevent the entrance of cyanide solution during the conventional plating bath, the area under the plug remains unplated.

To plate this area, Curtiss-Wright's Propeller Division uses brush plating, in which the electrolyte is brought to the part and current passed through it. The process is now being used in an extensive overhaul program on propellers for the B-36 airplane.

The equipment being used for this process is a product of the Marlane Development Co., New York, N. Y.

In the current B-36 propeller renovation program, hundreds of propellers are being overhauled. They are completely dismantled and every part is inspected for wear and replaced, if necessary. Each blade is checked carefully to find signs of damage. If it passes this inspection, it is reprocessed just as when it was new.

As part of the rejuvenation, each blade is carefully cleaned, plated, rinsed, then run through an Anozinc process and rinsed again. After the final rinse, dried compressed air is used to blow off any remaining moisture. At this point the job is finished, except for the small areas around the vent opening, which are treated separately by the Dalic process.

Brush Plating

The cathode lead from the plating

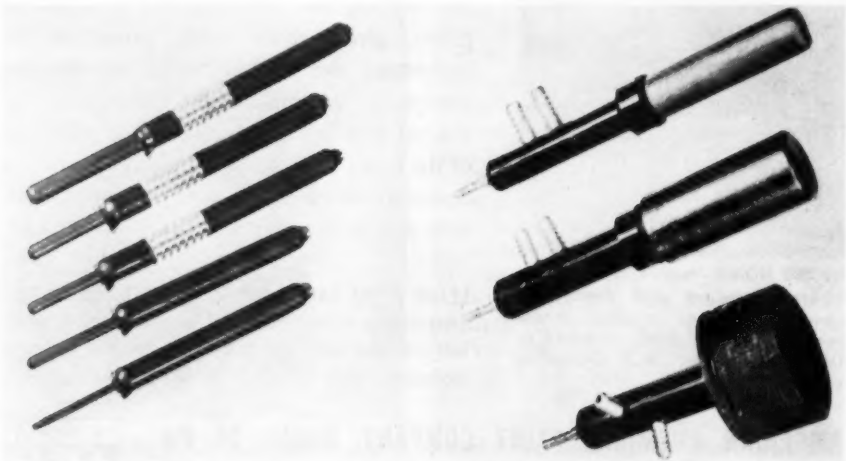
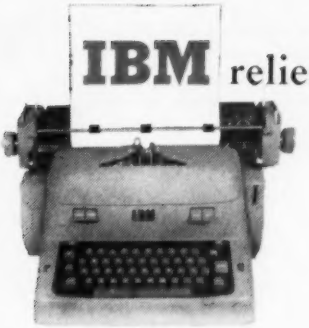


Fig. 1—Some of the various types of Dalic styluses used for deposition of metal by brush plating. Plug and cap types with either air or water cooling are used for this process.



IBM relies on RANSBURG NO. 2 PROCESS Electrostatic Spray Painting

to get the excellent and uniform high quality wrinkle finish on all

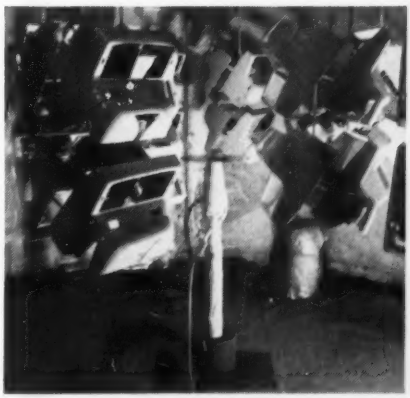
IBM ELECTRIC TYPEWRITERS

IBM's strict quality standards are easily maintained with Ransburg No. 2 Process in the painting of Electric Typewriter parts. Rejects by the former hand spray method used to run as high as 30% on some parts. Now, with automatic Electro-Spray, rejects for all reasons are only 3% to 5%.

Three Times as Many Pieces per Gallon!

Along with increased production, paint mileage is stepped up, and they get three times as many pieces per gallon as by the former hand spray method. That's because efficiency of the Ransburg No. 2 Process Reciprocating Disk puts the paint where it's supposed to go . . . on the parts.

Want to know how Ransburg Electro-Spray can improve the quality of your painted products . . . and at the same time, cut your paint and labor costs? At no obligation to you, we will make complete laboratory tests with your products to prove the advantages and cost saving benefits which can be yours with Ransburg No. 2 Process. Write or call.



Both prime and finish coats are uniformly applied to IBM Electric Typewriter cases as they rotate around the floor-mounted Ransburg No. 2 Process reciprocating disks. Automatic Electro-Spray provides three times as many pieces per gallon as by former hand spray.

Ransburg ELECTRO-COATING CORP.

Indianapolis 7, Indiana

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rectifier is clamped to the work, and the stylus, which is part of the anode lead, is wrapped in cotton and dipped in the proper Dalic solution. Because they are non-toxic and non-evaporating, the solutions are kept in an open dish during use.

The plating department first uses a cleaning solution, passing the wet stylus back and forth over the area for about one minute, followed by a cold water rinse. Then, similarly, another stylus is moistened with the zinc plating solution, and once again rubbed over the area to be plated. In a few seconds, signs of a zinc deposit become apparent, and after approximately three minutes the desired thickness has been deposited. No special rinse is needed; cold water is enough.

Fig. 2—After cotton is wrapped around one of the styluses shown in Fig. 1, the stylus is connected to rectifier's anode lead and the work is connected to the cathode lead. Stylus is dipped in the proper solution and then rubbed back and forth over the work. In a few seconds zinc deposit begins to appear. Total time for this job: about five minutes. (Photo courtesy Marlane Development Co.)

After the plating process has been thus completed, the blade is sprayed with a clear lacquer, and painted yellow at the tip. The blades are then reassembled in the propeller hubs, checked out prior to shipment, and returned to service on B-36 aircraft.

For more data circle **6** on Reader Service Card

★ ★ ★

Vacuum Lift Speeds Panel Coating Operations

The Detroit trim plant of the Ford Division, Ford Motor Company, recently installed equipment for coating automobile door panels so that trim can be applied.

Located in Highland Park, a Detroit suburb, this plant makes decorative trim and performs related functions for the Ford Division's automobiles. One of the plant's functions is treating car door panels so that trim can be electrically bonded to them.

The setup installed for this work consists of conveyor systems, vacuum-type lifting mechanisms, a high-production roller coater and mechanized delivery of the panel pallets.

The panels are already cut to size when they arrive at the plant. The panels vary in area, but all are about 0.10 inch thick. Average weight is approximately two pounds.

Two stacks of these panels are placed on each side of a Union Automatic Vacuum Lift. The vacuum lift's pick-up arms shuttle out and descend on each stack. Suction cups are automatically actuated as they contact the top panel in each stack. The pickup arms then raise the panels to the proper height, shuttle back to the conveyor and release them onto the conveyor belt.

Clean up fast

with "LIQUID ENVELOPE"

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Spray-booth cleaning costs are at rock-bottom when you spray walls with "LIQUID ENVELOPE". Over-spray peels off in a jiffy, cutting heavy over-time and wasteful "downtime".

"LIQUID ENVELOPE" opaque white pigment improves illumination. Contains no toxic chlorinated solvents. Will not corrode walls or ducts. Dry film will not burn or support combustion.

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Practical Applications . . .

The conveyor carries the panels to a Union Roller Coater, where a resin coating is applied. The panels are then sent through an oven to cure the resin.

Later, as a part of the plant's production work, the panels are sent through several other Union Roller Coaters, which apply pressure-sensitive latex in preparation for trim-bonding operations.

Considerable versatility is permitted in speed of the operations performed, because the Union Automatic Vacuum Lift can be adjusted for different cycle speeds. In this installation, four complete sets of panels are handled per minute, but six sets can be run.

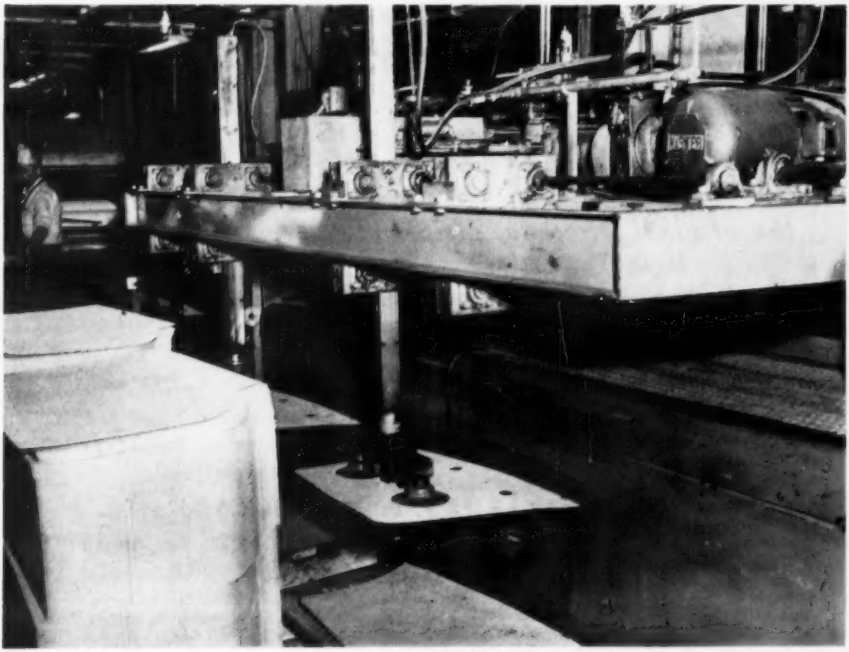
One of the advantages of handling the sheets with a vacuum lift is that panels can be moved directly from the pallets on which they are delivered; thus they can be positioned without a separate unloading operation, which reduces handling time.

For more data circle **7** on Reader Service Card

★ ★ ★

Plastisol-Lined Tumbling Barrels Solve Discoloration Problem

Lining tumbling barrels with plastisol has solved a discoloration problem at the Underwood typewriter



Union Automatic Vacuum Lift has just picked up sheets from the pallets. It will raise them vertically to the level of the conveyor belt, then transfer them horizontally and drop them onto the belt, which will carry them to the Union roller coater shown in the left background. (Photograph courtesy The Union Tool Corporation, Warsaw, Indiana)

For more data on advertisement on opposite page, circle **334** on Reader Service Card ——→

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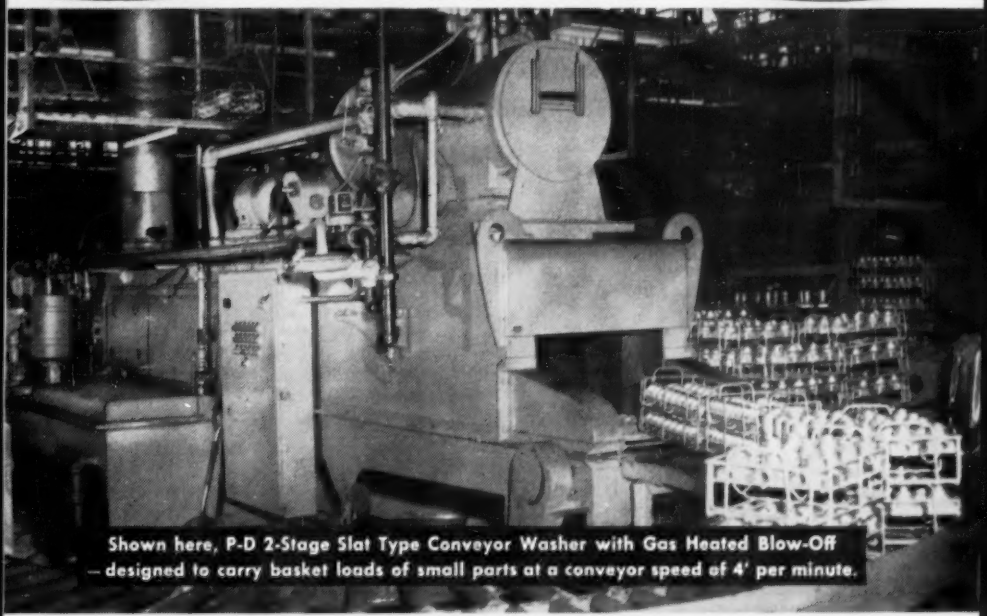
Low Initial Cost

Highest Efficiency



Shown here, P-D 2-Stage Slat Type Conveyor Washer with Gas Heated Blow-Off — designed to carry basket loads of small parts at a conveyor speed of 4' per minute.

Types and sizes of Power Spray Washers can vary as widely as shapes, sizes and weights of the metal parts to be cleaned. These operations can well be balanced into your finishing system with the installation of a Power Spray Washer by Peters-Dalton. The low initial cost and highest operating efficiency thus obtained can eliminate many of your finishing problems and effect savings of man-hours while improving product.

Peters-Dalton offers more than a quarter century of experiences in designing, engineering, fabricating and installing all types of finishing equipment. The Power Spray Washer most efficient for your needs can be created to perform the proper cleaning and surface treatment you should have for your products. Send us your specifications or prints. Just write, wire or phone . . . we'll be glad to tell you more.

Representatives in Principal Cities

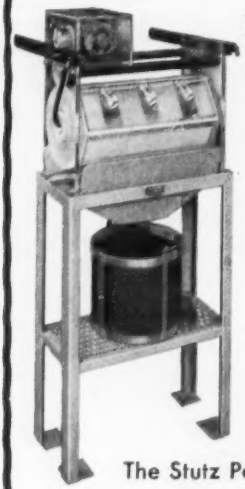
- *Hydro-Whirl Paint Spray Booths*
- *Industrial Washing Equipment*
- *Drying and Baking Ovens*
- *Hydro-Whirl Dust Collecting Systems*

PD Peters-Dalton INC.

A SUBSIDIARY OF DETROIT HARVESTER CO.

17000 Ryan Road . . . Detroit 12, Michigan

STUTZ



PORTABLE
PLATING
BARRELS

The Stutz Portable Barrel is made in 2 standard sizes with cylinders having inside dimensions of 6" x 12" and 8" x 18", I.D., and smaller upon application. Standard openings are 3/32". Smaller or larger openings can be furnished as required.

★ Baskets in perforated metals or wire mesh.

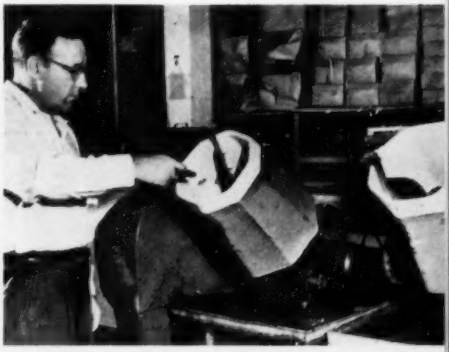
★ Load/Unload Stand for convenient and fast handling of work load.

We invite your inquiries.

THE STUTZ CO.
4410 Carroll Ave., Chicago 24, Ill.
Serving Industry 35 Years

For more data circle **335** on Reader Service Card

Practical Applications . . .



Underwood uses plastisol-lined tumbling barrels to barrel-finish typewriter keys. By plastisol lining the barrels, yellowing problem has been solved. (Photograph courtesy Metal & Thermit Corporation, Rahway, New Jersey.)

plant, Hartford, Conn. These tumbling barrels are used for polishing typewriter keys. When the company introduced white keys for its typewriters, they were often yellowed in the polishing process.

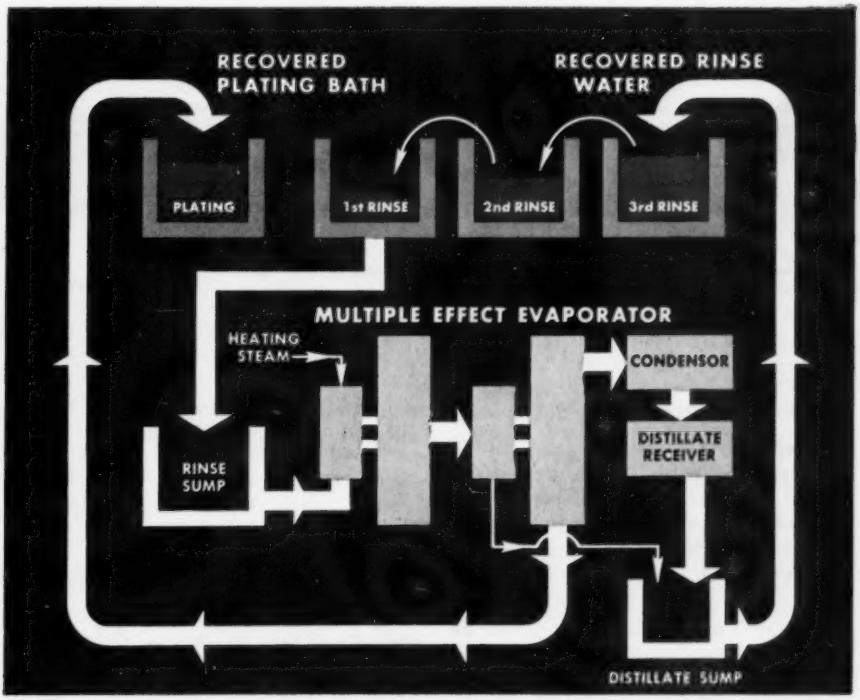
Underwood engineers experimented with a number of polishing methods to eliminate this problem, finally found that barrels dip-coated with a Unichrome plastisol made by Metal & Thermit Corporation would prevent yellowing. The typewriter keys are tumbled for several hours with wood chips.

The plastisol provides a 100 per cent-solids, polyvinyl chloride lining that resists the reaction of a wide variety of chemicals.

For more data circle **8** on Reader Service Card

★ ★ ★

Men were drivers in 89.7 per cent of fatal accidents on U. S. highways in 1956.



New recovery system cuts plating costs!

Industrial's Plating Bath Recovery Equipment provides complete recovery of acid and metal drag out losses, using a rapid evaporation process engineered to suit your operation. The savings can be fantastic . . . the system not only returns fresh plating solution to the bath and pure water to rinse tanks . . . it eliminates the high cost and trouble of neutralizing corrosive rinse water for disposal. In a typical case the replacement of solution and destruction of rinse water cost $12.46 per hour. **The Industrial System recovers the bath at a cost of $2.13 per hour.**

Unbelievable? . . . No sir! . . . these are systems designed by a company with a 30-year reputation for building the best in plating equipment. Let us prove it—our staff will be glad to make an analysis of your process, recommend equipment and estimate costs and savings.

Send for complete data

INDUSTRIAL

FILTER & PUMP MFG. CO.

5904 Ogden Ave., Chicago 50, Ill.

Please send me reprints of articles and literature on Industrial's Plating Waste Recovery Systems.

NAME_____

TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

For more data circle 336 on Reader Service Card

finishing clinic

Suggested solutions to problems submitted by readers. Send your problem to our Editorial Staff. There is no charge.

Painting Electrical Conduits

Question: *We are interested in equipment to paint the inside surface of one-inch-I.D. electrical conduit in ten-foot lengths with clear lacquer.*

Please send the names of companies who could supply this material.

F. K.

Answer: The simplest way, from an application standpoint, would be to dip the ten-foot lengths of conduit in lacquer, followed by appropriate draining. However, we are suggesting companies to be contacted with regard to your question. These companies can offer excellent suggestions based on their long years of experience in this business.

★ ★ ★

Enamel for Signs

Question: *Would you please tell us if a flat finish enamel is manufactured for signs. Would a roller-coated enamel have as long outdoor life as regular enamels?*

We would also like to know if rubber-based paints stand outdoor exposure.

C. E. F.

Answer: We are referring you to companies who manufacture enamels for use in roller coating of sheet stock. They will also be able to advise you regarding the outdoor exposure resistance of rubber-based paints.

★ ★ ★

Two-tone Finishes

Question: *We wish to try out some different materials in a blasting operation with masking to produce the effect of two-tone finishes on the finished product. We are familiar with materials such as nut hulls, and believe that many similar materials are available. This process may be suitable for us to use to produce our two- and three-tone-effect plated finishes.*

Please send us the names of companies who make equipment and materials for this process.

B. F. J.

Answer: We are referring you to several companies from whom blasting equipment and materials can be secured.

★ ★ ★

Bright Dip for Brass and Copper

Question: *We are interested in a bright dip for brass and copper in a dry salts compound form. A number of years ago such a compound was manufactured and advertised as a dry salts compound to which plain water was added to form a non-toxic, non-*

fuming bath for bright dipping brass and copper. This compound was in powder, granule or flake form and did not require exhausting.

If you have any information on such a product or can recommend a company that might supply a bright dip that will serve our purposes, will you please advise.

H. G. G.

Answer: We are referring you to sources for the material in which you are interested. Also, we are happy to forward a copy of our magazine, as you request.

With regard to books on finishing, we recommend "Principles of Electroplating and Electroforming" by Blum and Hogaboom, which we have available at $7.00 per copy.

★ ★ ★

Fire Damage to Steel Sheets

Question: *We have had a fire in our plant. Some material (steel sheets), painted and unpainted, has been damaged by smoke and heat.*

We are interested in treating this material so that when painted the paint will dry.

H. T. A.

Answer: The exact method for treating your damaged material will depend, of course, upon the extent of damage and the type of finish which you must apply after treatment.

We are referring you to companies who manufacture metal treating chemicals from whom you can secure additional information on this problem.

★ ★ ★

Finishing Gasoline-Dispensing Pumps

Question: *We are manufacturers of gasoline dispensing pumps and storage tanks and are interested in having information regarding the finishing of these units. At the present time, we have finishing setups for our tanks and pumps and are interested in securing helpful literature on this subject for our personnel.*

H. R. E.

Answer: We are sending you copies of the following reprints, which contain information you may find useful:

"Aluminum Siding Painted and Formed from Continuous Coil Stock"—by Ezra A. Blount—Reprinted from the May, 1956 issue of PRODUCTS FINISHING; "Finishing Refrigerators With Hot Sprayed Enamel"—by Frank L. Bonem—Reprinted from the February, 1953 issue of PRODUCTS FINISHING; "How the Paint Warmer Aids Finish Application and Quality"—by Lee Turner—Reprinted from the December, 1954 issue of PRODUCTS FINISHING; "Preparing and Painting Zinc Surfaces" — by Ernest W. Horvick — Reprinted from the February, 1956 issue of PRODUCTS FINISHING.

★ ★ ★

Accelerated Corrosion

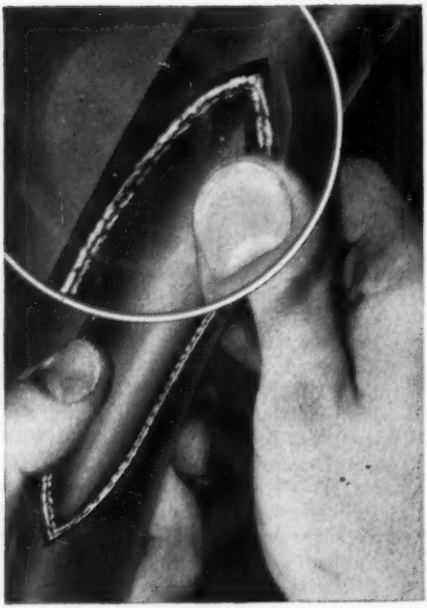
Question: *We would like to obtain information regarding the various Corrodkote formulations which might be useful for evaluating the relative corrosion resistance of anodized and untreated aluminum in a mild industrial atmosphere. These are exterior exposures.*

Detailed information regarding testing procedure would also be appreciated.

G. M.

Answer: Perhaps you have seen the article in the January issue of PRODUCTS FINISHING, "Two New Accelerated Corrosion Tests." We are attaching tear-sheets of this article for your information.

For detailed information on these testing formulations and procedures, we are referring you to two sources from whom additional data may be obtained.



DeVilbiss-resists

DeVILBISS PAINT HOSE

DeVilbiss synthetic-compound liner lasts indefinitely, because it is specially formulated to withstand all solvents.

ORDINARY PAINT HOSE

Ordinary hose, with rubber-composition liner, soon deteriorates from active solvents present in all paint materials.

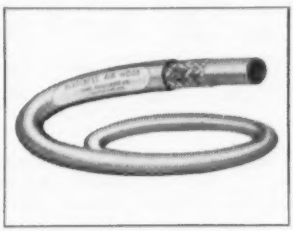
made paint hose solvent action longer

"Torture" tests, the most conclusive known for solvent-hose analysis, prove the superiority of DeVilbiss hose.

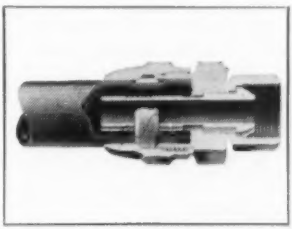
Fluid liners from DeVilbiss and other brands of paint hose, when exposed to the prolonged solvent action of common paint thinners, tell the story. The DeVilbiss liner shows no sign of deterioration, while others show marked changes from the effects of turpentine, acetones, ketones, acetates, toluol and other hydrocarbons — proof that DeVilbiss hose outlasts other makes in operations where paints are conveyed.

This laboratory evidence is your assurance of longer protection against hose-liner disintegration, swelling, and plugging — against paint contamination and discoloration!

Next time you order, specify DeVilbiss-made hose. Not only does it resist solvent action better, but also, it is manufactured to closer dimensional tolerances . . . and is produced in a specialized DeVilbiss Rubber Plant, where the requirements of quality hose for spray painting have been a scientific study for over 40 years.



DeVilbiss' new oil-resistant air hose is specially compounded for long-lasting service with air tools that require lubrication through the air stream.



DeVilbiss hose connections fit all common sizes of all types of air and fluid hose; provide a smooth, tight-grip, leakproof connection; are reusable.

THE DEVILBISS COMPANY

Toledo 1, Ohio

Santa Clara, Calif. • Barrie, Ontario • London, England

Branch Offices in Principal Cities

FOR BETTER SERVICE, BUY

DEVILBISS

For more data circle **337** on Reader Service Card

New Equipment, Materials, Processes

› Cleaning
› Polishing
› Plating
› Paint Finishing

Aluminum Deoxidizer

Heatbath Corporation, P. O. Box 78, Springfield 1, Mass., has introduced a product called "Deoxide" for desmutting, deoxidizing and removing heat scale from aluminum.

Deoxide is used with water, at 8 to 16 ounces per gallon at room temperature. Time of treatment will vary from 30 seconds to 10 minutes, depending upon application. The material is furnished as a powdered product. It will not attack the base metal after removing scale.

For more data circle **9** on Reader Service Card

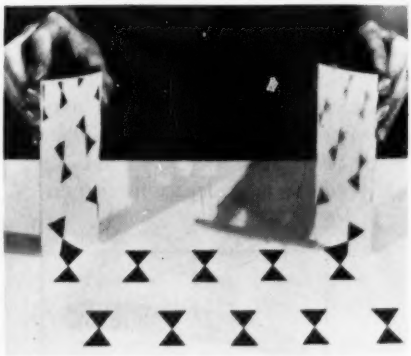
★ ★ ★

Aluminum Alloy

Increased brightness from anodized aluminum extruded shapes is possible using an aluminum alloy recently developed by Alcoa Research.

Alloy X6463, when anodized, offers excellent brightness on commercial aluminum extrusions, the manufacturer states.

Brightness of the treated metal makes it especially valuable in such automotive applications as bumpers, grilles, exterior and interior trim panels, window frames, emblems, lettering, and others.



Aluminum Alloy X6463, left, shows its improved reflectivity properties by contrasting it with the alloy formerly used (right).

Products fashioned from the alloy exhibit similar mechanical properties, and can be extruded to the same manufacturing tolerances as those in Alloy 6063.

Extrusions in the alloy now are available for both commercial and developmental applications. Additional information is obtainable by writing Aluminum Company of America, 796 Alcoa Building, Pittsburgh 19, Pa.

For more data circle **10** on Reader Service Card

Portable Plating Solution Filter

Compact design has been combined with a capacity of up to 900 g.p.h. free flow (or about 600 g.p.h. with carbon charge) in a plating solution filter recently introduced by Hanson-Van Winkle-Munning Co., Matawan, N. J. Although it measures only 15 by 15 by 28 inches, the portable filter has 3.5 square feet of filter area, provided by 15 Perspex plastic plates.

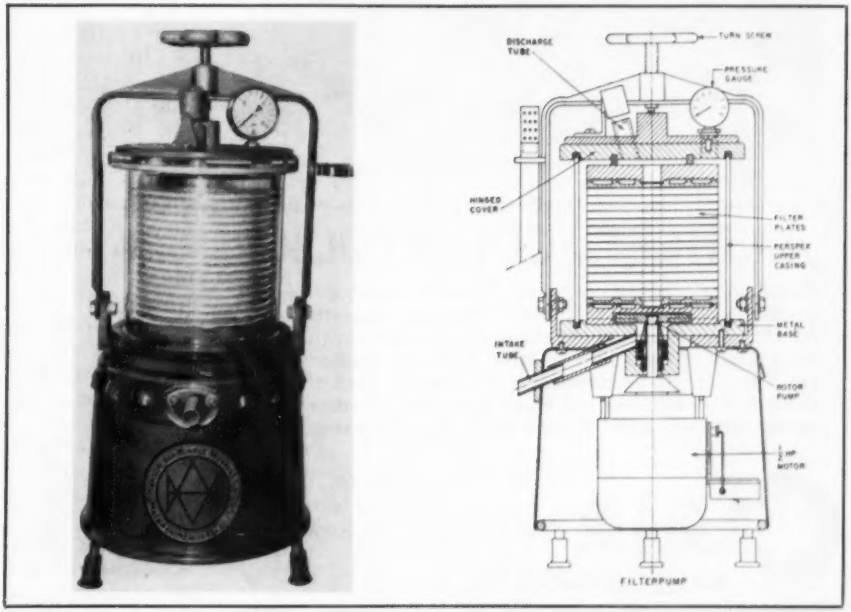
A solution entrance at the bottom of the unit and discharge at the top is said to effectively prevent liquid from by-passing the filter. The transparent plastic casing permits inspection of filtering action.

The H-VW-M Dincalux Portable Filter is designed for use in plating rooms as a general purpose unit. It may be used for intermittent or constant filtering or transfer pumping. The Perspex components resist alkalies and weak acids. They will withstand limited quantities of organic brighteners.

A ½-h.p. single-phase motor with a stainless steel shaft is housed in the base. It is directly connected to a centrifugal pump. The pump is enclosed within the filter. The filtering section is mounted on rubber gaskets between the upper and lower housing plates.

A brass pressure gage mounted atop the filter housing indicates when the efficiency of the filter is reduced to a point requiring cleaning. A built-in air chamber prevents the filtrate from coming in contact with the exposed parts of the gage. Overall unit design permits ready disassembly.

To operate this filter pump, filtrate is fed into the center of the pump



H-VW-M Dincalux Portable Filter. Schematic drawing on right shows construction of filter.

rotor through the intake hose. The bottom filter plate is placed over the pump rotor and acts both as the pump stator and as the first filter disc. This is followed alternately by filter paper or cloth, and a filter plate.

The filtrate passes through the filtering medium along the spider web grooves on the lower side of each filter plate and up the center channel formed by interlocking holes in the center of the filter plates. Purified filtrate passes out the top of the center channel. It leaves the filter through the outlet tube.

For more data circle 11 on Reader Service Card

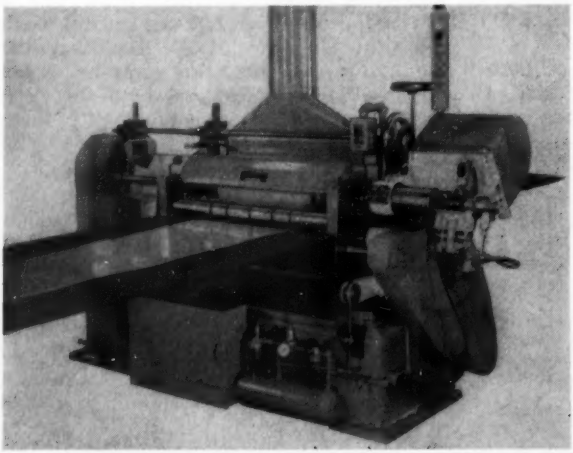
★ ★ ★

Vacuum Gage

A single-station, panel-mounted thermocouple vacuum gage is now available from the Rochester Division of Consolidated Electrodynamics Corporation. Designated the TG-025, this gage operates on two size "D" flashlight batteries contained within its housing. Terminals are provided on the instrument for connection to an external battery power supply.

The range of the TG-025, from 0 to 1000 microns Hg of dry air pressure, is covered on one nonlinear scale. Five microns is the smallest indicated marking. The pressure range, from 0 to 60 microns Hg, extends over more than half of the entire scale.

The TG-025 is equipped with an all-metal sensing tube, type TG-77, and is not harmed by exposure to atmospheric pressure. Low heater current



Clair Model 209 Pinch-Roll Thru-Feed Surface Finishing Machine

for SHEET or COIL STOCK

Incredibly versatile - - - the CLAIR model 209 will handle ANY type of surface finishing operation - - PLUS broadened applications for delusterization of transparent plastic film, printed circuitry applications, etc., etc. It will accommodate any type or kind of long sheet and continuous coil stock in metals, plastics - - - or whatever you have in mind for surface finishing.

CLAIR

For information on YOUR Surface Finishing Problem write, phone or wire.

MANUFACTURING CO., Inc., OLEAN, N.Y.

Offering the Most VERSATILE Line of Surface Finishing Machines

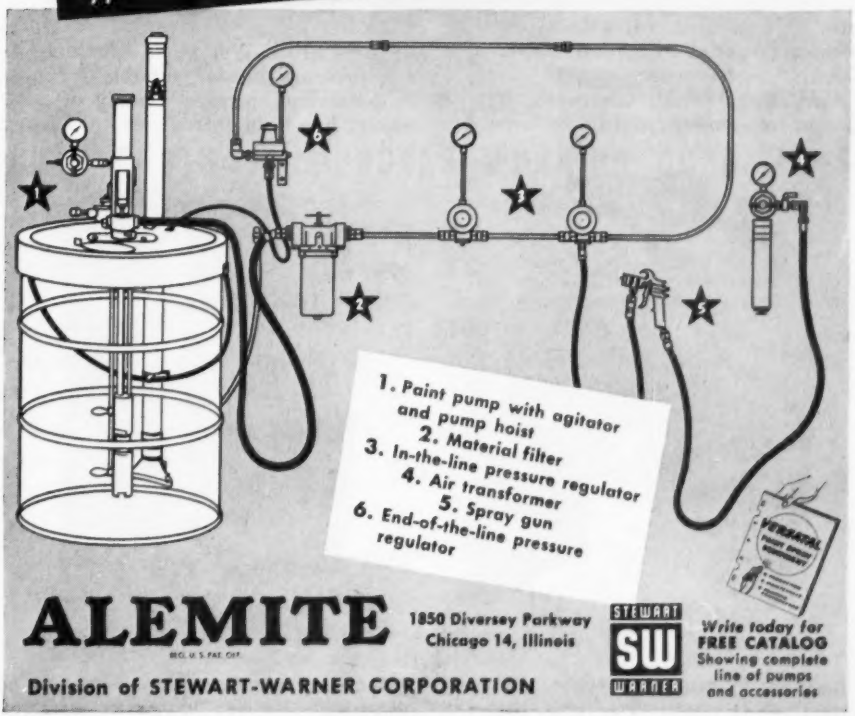
For more data circle 338 on Reader Service Card

NEW! from ALEMITE!

COMPLETE PAINT SPRAY SYSTEMS

FOR ALL SIZES OF PRODUCTION LINE OPERATIONS!

Typical Alemite Recirculating System Consists of:


1. Paint pump with agitator and pump hoist
2. Material filter
3. In-the-line pressure regulator
4. Air transformer
5. Spray gun
6. End-of-the-line pressure regulator

ALEMITE
REG. U. S. PAT. OFF.

1850 Diversey Parkway
Chicago 14, Illinois

Division of STEWART-WARNER CORPORATION

STEWART SW WARNER

Write today for **FREE CATALOG** Showing complete line of pumps and accessories

For more data circle **339** on Reader Service Card

reduces zero drift by decreasing the rate of thermal decomposition of organic vapors.

The gage is also useful as a moderately sensitive leak detector in the range from 1 to 1000 microns Hg.

For further information on the TG-025 write for Bulletin No. 9-1 to Consolidated Electrodynamics Corporation, Rochester Division, 1775 Mt. Read Blvd., Rochester 3, N. Y.

For more data circle **12** on Reader Service Card

★ ★ ★

Barrel Finisher

The Globe 3000 Series Burr-Rite, Sr. is designed to handle small to medium-large production runs. With its 8.2-cubic-foot capacity, the 3000 Series is useful in several ways: it is handy for processing medium-sized loads that would otherwise tie up larger equipment; it can be used for sample processing; and it is useful for finishing a variety of parts, since it has four compartments.

The 3000 Series Burr-Rite, Sr. is equipped with a free-swinging safety screen; a lightweight aluminum door with a quick-acting latch that allows faster loading and unloading; a ¼-inch abrasion-resistant neoprene lining; a manually operated forward and reverse drum switch; a manual starter that incorporates overload protection; and a heavy-duty chain-to-sprocket drive.

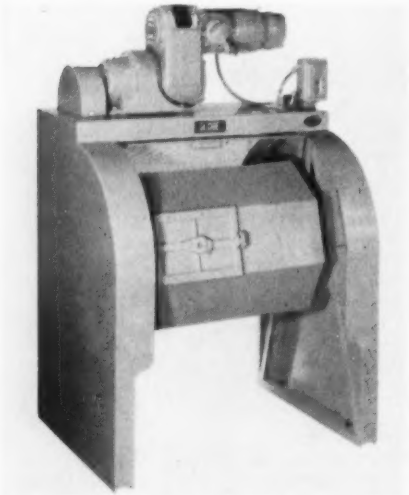
Literature on this machine is available from Casalbi Co., 546 Wayne St., Jackson, Mich.

For more data circle **13** on Reader Service Card

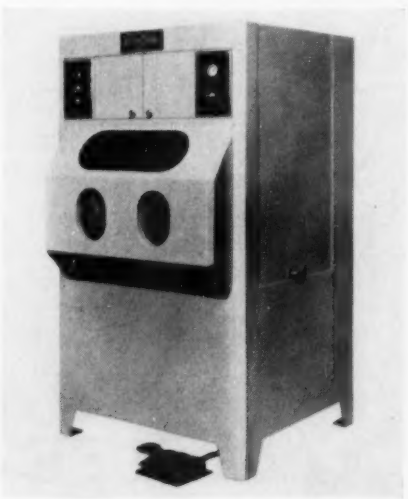
★ ★ ★

Abrasive Wet-Blasting Machine

The Clemco Wet Hone Machine, a wet pressure blaster suitable for use in deburring, cleaning, honing or polishing, has been introduced by Clem-



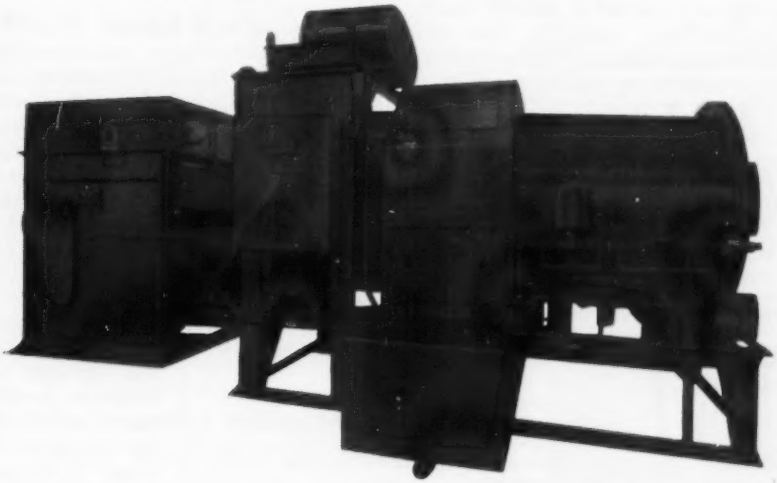
Globe 3000 Series Burr-Rite Sr. is useful for small to medium-large production runs.



The Clemco Wet Hone Machine: for use in deburring, cleaning, honing or polishing

Another . . . Ransohoff

automatic media return
cleaning and de-burring barrel



CUTS COSTS . . . IMPROVES WORKING CONDITIONS

The Automatic Media Return Cleaning and De-Burring Barrel is equipped with a Power Loader (not shown) which discharges work onto a vibrating pan that feeds it into the de-burring compartment of the drum.

Work is washed while it is being de-burred. During discharge of work, the de-burring media is automatically separated from the work which eliminates *manual handling* and *loss of media.*

Send samples of your parts for test-processing, no obligation. Whatever your requirements, call on Ransohoff for a money-saving solution to your problems.

For details, write:
Ransohoff, Inc., 610 N. Fifth Street
Hamilton, Ohio

Ransohoff *The oldest name . . . the newest ideas*

Designers and Builders of Equipment for the Surface Treatment of Metals

• Washing • Rinsing • Burnishing • Rustproofing • Sawdust Polishing and Drying • De-Scaling • De-Burring • Drying • Pickling • Complete Finishing Systems • Foundry Wet Cleaning Mills • Ultrasonic Cleaning

For more data circle **340** on Reader Service Card

entina, Ltd., San Francisco, Calif.

The Clementina machine, which will blast with anything from 30 to 500 mesh, is controlled by pressing a foot lever. It is equipped with a wide window and foot-controlled window washer for maximum visibility. The unit is drained, cleaned and refilled quickly by means of a pump. A one-inch air line and a ½-inch water line are necessary to put the machine in operation. Literature containing full information is available from Clementina, Ltd., 2277 Jerrold Ave., San Francisco 24, Calif.

For more data circle **14** on Reader Service Card

★ ★ ★

Water Wash Spray Booth

A water wash spray booth recently introduced by Ramco Equipment Corporation is designed to simplify maintenance, the manufacturer states. It incorporates four separate stages of treatment for the paint-laden air stream.

In the first stage of washing the exhaust air, heavier particles are removed. The second washing stage is immediately below the lower baffle of the booth. A swirl of water is set up by the air stream, providing more intimate contact with the paint particles, so that they are "wetted," causing them to drop into the collecting tank. The third stage is set up by a baffle immediately above the lower baffle. It removes progressively finer particles of paint from the air stream. The fourth and final washing stage is set

Plastisols and Organosols for *perfection* in protection . . .

No two products require the same *degree* of protection. *Your* product may need a finish *custom-formulated* to provide sufficient protection against corrosion, abrasion or other enemies.

Stanley Technicians formulate vinyl dispersions (*both* Plastisols and Organosols) for many of America's best known and best-protected products. They will tell you if a standard Stanley Plastisol or Organosol System will suffice . . . or they will *custom-formulate* a coating to assure *perfection* in *protection.*

Write for our free file folder, "PLASTISOLutions To Your Finishing Problems," to . . .

STANLEY CHEMICAL COMPANY*
Subsidiary of The Stanley Works
DEPT. H, 1468 BERLIN STREET, EAST BERLIN, CONN.
**Member, Vinyl Dispersions Division, S.P.I.*

STANLEY

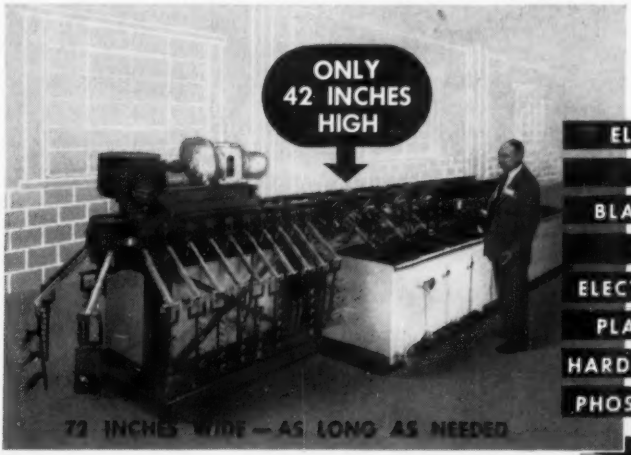
See Stanley first for finishes that last
LACQUERS • SYNTHETICS
VINYLS • ENAMELS

STANLEY TOOLS • STANLEY HARDWARE • STANLEY ELECTRIC TOOLS

For more data circle **341** on Reader Service Card

MEET "LITTLE STEVE," A NEW, SPACE SAVING, LOW COST AUTOMATIC PLATING AND IMMERSION PROCESSING MACHINE

Here's What "Little Steve" Can Do



- ELECTROPLATING
- ANODIZING
- BLACK JAPANNING
- ENAMELING
- ELECTROTYPE PLATING
- PLASTIC COATINGS
- HARD CHROME PLATING
- PHOSPHATE COATINGS

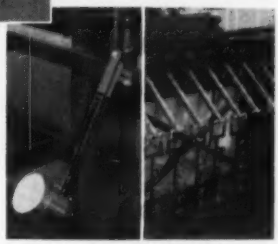
UP TO 40,000 PIECES PER DAY
540 RACKS PER HOUR

Yes, this new immersion processing machine by Stevens can process up to 40,000 pieces per day — and it has a variety of other uses too.

Ruggedly built "LITTLE STEVE," the big hit of the Metal Finishing Industry, can be obtained at a surprisingly low initial cost. It is ideal for large or small companies for it will fit many production cycles. It uses an arm as a rack or will take racks for small parts.

Being of small size it offers no floor space or load problems; involves low solution expense and means a small capital investment. It can be used easily as a laboratory testing machine.

For further information about "LITTLE STEVE" write for illustrated folder or call your local Stevens sales engineer.



A single part can be placed on each carrier arm as shown in the illustration above or racks of numerous parts can be used

If a larger production model is desired the "Sgt Steve" unit, using the same basic design, will provide the answer

BRANCHES IN PRINCIPAL CITIES

BRANCHES: BUFFALO • CLEVELAND • INDIANAPOLIS • NEW HAVEN

FOUNDRY FACINGS | GRINDING OPERATIONS | BLAST FINISHING | BARREL TUMBLING | METAL CLEANING | POLISHING & BUFFING | AUTOMATIC FINISHING | AUTOMATIC PLATING | METAL RECLAMATION

Metal Finishing equipment and supplies from castings or stampings to finished product

FREDERIC B. STEVENS
INCORPORATED
YOUR METAL FINISHING SUPERMARKET
DETROIT 29, MICHIGAN

For more data circle **342** on Reader Service Card

up immediately above the second baffle, where a stream of clean water is introduced to remove extremely fine particles.

The air stream emerging from this booth should contain less than one-half grain of paint solids per thousand cubic feet of air, the manufacturer reports.

In addition to improved cleaning and easier maintenance, the booth is said to reduce fire hazards. A bulletin that gives complete information on this booth is available from Ramco Equipment Corp., 811 Edgewater Rd., New York 59, N. Y.

For more data circle **15** on Reader Service Card

★ ★ ★

Pickling Inhibitor

A corrosion inhibitor for use in sulfuric, sulfamic and phosphoric acids has been developed by Armour & Company for use in descaling and pickling baths.

Called Inhibitor 2508, the product can be used where acids are employed to chemically remove undesirable coatings from metal surfaces.

The product is in liquid form. It is easily dispersible in water and is highly effective at low concentrations. It can be used at rates as low as 100 to 500 p.p.m.

Laboratory tests indicate that mild steel in 15 per cent sulfuric acid at 200 deg. F. has a corrosion rate over 2.5 pounds per square foot per day, compared to less than 0.003 pounds per square foot per day in an inhibited acid.

For further information contact

GET AHEAD
Stay Ahead in Your SPRAY DECORATING with Conforming Matrix
9 10 11 12
ELECTRO-FORMED NICKEL OR COPPER MASKS of all types for shielding and spraying highly intricate areas in single or multiple colors.
• Permit more shots between washings.
• Allow for reasonable dimensional differences in piece parts.
• Finger clearance affords easier loading of parts.
• Right hand tab masks free both hands for productive movements.
Send prints or sample parts, giving production requirements and results you wish to achieve.
C M
Conforming Matrix CORPORATION
356 Toledo Factories Building • Toledo 2, Ohio

For more data circle **343** on Reader Service Card

Atom smasher builder
TESTS DISCS ...PICKS 3M!

AVERY AND SAUL COMPANY, pressure vessel and steel fabricator of Cambridge, Mass., builds electron accelerator tanks for Van de Graaff atom smashers. The ⅞" A-212 Grade B carbon steel (70,000 psi) used in these tanks must be completely clean—free of surface imperfections and scale, and ground to a 125 micro-inch surface. To do this important clean-up job, the company uses coated abrasive discs on air grinders and has experimented with the major brands of discs on the market today.

Results are conclusive: 3M abrasive discs—Grit 36, Type "C"—*have a 50% longer production life than any other disc used,* and do a perfect job of clean-up as required in this high-standards industry.

3M ABRASIVES

You can count on the same outstanding results when you put 3M Abrasive Discs to work in your plant. They're famous the world over for quality and dependability—have helped manufacturers everywhere increase production, cut costs. Get the full facts from your 3M Representative, or send the coupon below.

Minnesota Mining and Manufacturing Co.
Dept. J-7, St. Paul 6, Minnesota

- ☐ Send me FREE booklet "Tips for the Disc Grinding Operator"
- ☐ Send me FREE booklet "Weld Grinding and Blending"
- ☐ I'd like to talk with a 3M Representative

NAME.....TITLE.....

COMPANY.....

ADDRESS.....

CITY.....ZONE.....STATE.....

Made in U.S.A. by MINNESOTA MINING AND MFG. CO. General Offices: St. Paul 6, Minn. In Canada: P.O. Box 757, London, Ontario. Export Sales Office: 99 Park Avenue, New York City.

3M PRODUCT OF RESEARCH

For more data circle **344** on Reader Service Card

Armour and Co., Chemical Div., 1355 W. 31st St., Chicago 9, Ill.
For more data circle **16** on Reader Service Card

★ ★ ★

Industrial Gloves

The Pioneer Rubber Company, Willard, Ohio, has announced two additions to its line of industrial gloves: (1) a knit wrist, fully-coated glove in women's sizes; (2) a longer (14¼-inch) fully-coated gauntlet for men.

Each glove has a coating of tough, wear-resistant Pylox (TM) over a lining of Soff-nap knit jersey. The vinyl Pylox coating protects the gloves against tears, snags and punctures as well as deterioration from oils, caustics and acids. The gloves are shaped to give ample finger freedom.

The patented single-seam lining eliminates many of the irritations caused by seams rubbing against the palm, thumb, back of the hand or along the fingers. In addition, there are no weak points to wear through quickly, since the work surface is seam-free.

Stanflex Rubber Gloves: left, 14½-inch fully coated, gauntlet-type glove for men; right, knit-wrist, coated glove for women.

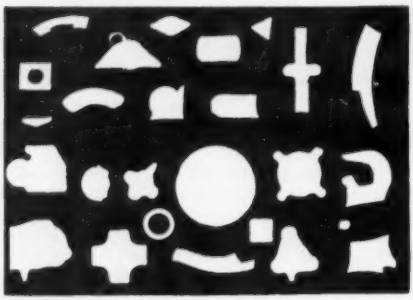
These gloves are recommended for handling sheet metal, pipe, clay and concrete products, bulk chemicals or lumber as well as for a variety of general industrial uses including grinding, painting and trucking.
For more data circle **17** on Reader Service Card

★ ★ ★

Chromium Stripper

A dry acid replacement salt developed by MacDermid, Inc., Waterbury, Conn., is said to be useful for stripping chromium plated parts.

Developed originally to replace liquid acids in neutralizing and activating dips for plating, MacDermid M-629 has been found to be an excellent chrome stripper. It will remove chromium at the rate of 0.0002 inches in a half minute, by immersion only, the manufacturer states. M-629 is used at a concentration of one pound per gallon at 180-190 deg. F. for this application. After stripping, the nickel



Pre-Cut Masks Speed Finishing

Brady Pre-Cut Masks are self-sticking — go on fast and accurately. Protect from finishing to inspection. Hundreds of shapes and sizes in stock, for paint spraying, baking, tumbling, etc. Specials made to order. Fast delivery. Distributors in 150 cities.

Write for free samples and Bulletin 160-C.

W. H. Brady Co.
746 W. Glendale Ave., Milwaukee 9, Wis.

For more data circle **345** on Reader Service Card

Leading metal cleaning formulators can tell you —Dow Alkali does make a difference!

The average user of metal cleaning compounds can easily see the difference in performance between a good cleaner and a poor one. However, it's not so easy to detect the difference between two cleaners that give nearly equal cleaning efficiency.

Yet, there often is a difference.

Leading formulators of metal cleaning compounds know that the ingredients they start with make a difference—an important difference in cleaning efficiency. That's why they use Dow Sodium Orthosilicate and Dow Caustic Soda year in and year out. Experience has proved to them that these ingredients deliver the highest alkaline cleaning power they can buy at any price!

Ask your supplier of metal cleaning compounds about the important difference in formulations made with Dow Alkali. THE DOW CHEMICAL COMPANY, Midland, Michigan, Department AL 611L.

YOU CAN DEPEND ON DOW

For more data circle **346** on Reader Service Card

underplate is bright and free of discoloration, it is stated.

Following the stripping operation, parts should be rinsed carefully before replating. Quality of the replated work is said to be equal to that of the original, and no damage to the nickel plate is caused by this procedure. No objectionable fumes are given off.

Another application for this material is in cleaning out piping systems and nozzles of spray washers. M-629 at a concentration of 4 oz./gal. is heated to 100 deg. F. and circulated through the piping system.

In conventional use in the plating cycle, M-629 is said to produce excellent activation and plate adhesion, bright plate, and freedom from smut and mottling.

Further data on this material may be obtained from MacDermid, Inc., Waterbury 20, Conn.

For more data circle **18** on Reader Service Card

★ ★ ★

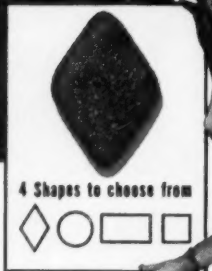
Conductive Coating

A colloidal dispersion of copper in lacquer that produces a surface with good electrical conductivity has been introduced by Acheson Colloids Co., Port Huron, Mich. Designated No. 235, this dispersion is useful for providing a conductive film for printed circuits or electroplating of nonconductors.

The dispersion may be applied by spraying or brushing. No baking is required. The film will air-dry so that it can be handled in a few minutes.

it's the SHAPE that counts!

ALL NEW... **Speed-D-Burretts*** Controlled Size and Shape **ABRASIVE MEDIA for PRECISION BARREL FINISHING**



Outlasts other media as much as 10 to 1 Controlled grain size Aluminum Oxide bonded firmly with specially formulated synthetic rubber to allow finishing of precision parts hitherto impossible to barrel finish. Molded and cured to controlled hardness that assures long life, maximum cushioning yet gives desired cutting, honing or polishing action. May be used with any equipment.

New "Burretts" permit abrasive action in the most remote corners and recesses of delicate, precision parts. Will not chip or splinter into odd shapes that lodge in blind or threaded holes. Prevents broken chip damage to expensive parts.

Write for catalog of prices, sizes, shapes and grits—today!

*Pat. Pend.

SPEED-D-BURR CORPORATION PRECISION BARREL FINISHING

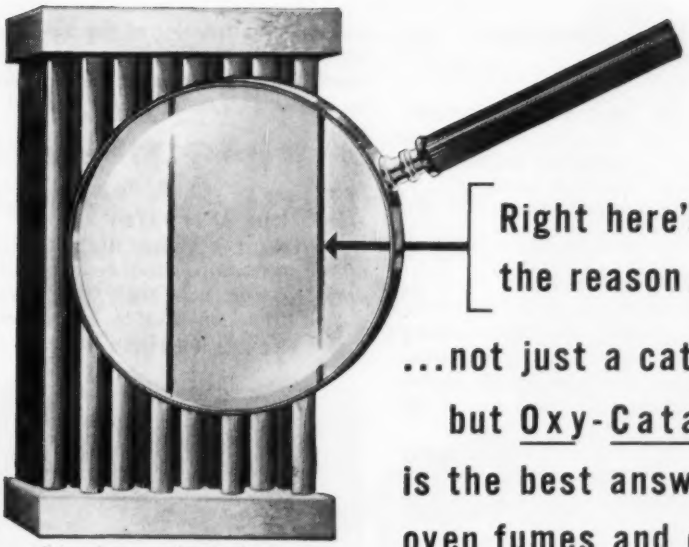
THE WORLD'S MOST COMPLETE LINE OF FINISHING EQUIPMENT & SUPPLIES

Write for catalogs on:
FUTURAMA LINE • MITY-MITE LINE • SPACE-MISER MEDIA AND COMPOUNDS • HANDLING EQUIPMENT

Service is our most important product . . . Use it!

SPEED-D-BURR CORPORATION
3613-e San Fernando Road, Glendale 4, Calif.

For more data circle **347** on Reader Service Card



Enlarged cross-section drawing of an individual rod in an Oxycat unit

Right here's the reason...

...not just a catalyst but Oxy-Catalyst is the best answer to oven fumes and odors

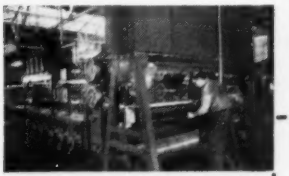
The secret lies in the .003-in. film on the porcelain Oxycat carriers. It's this more efficient catalyst which Oxy-Catalyst uses, a patented combination of alumina and platinum on porcelain, that gives better cleanup, better heat recovery, and longer catalyst life.

Oxycats can eliminate fumes and odors from drying ovens and other processes by oxidizing organic and combustible contaminants in the exhaust far more efficiently than any other catalyst ever developed.

To stop your oven fumes and odors—to recover waste heat—to reduce fire hazards and maintenance problems caused by troublesome condensates, Oxy-Catalyst offers a complete engineering service. We make the entire installation—engineered to your exact requirements—and we assume full responsibility for the performance of the equipment.

Oxy-Catalyst works closely with all leading oven manufacturers. And new ovens can be designed with the catalyst as an integral part of the oven's heating system. So when you order new ovens, specify Oxy-Catalyst equipment.

If you would like to compare—to see for yourself the remarkably high efficiency of an Oxy-Catalyst installation—fill in this coupon, or write on your business letterhead, for complete information now.



Oxycat units were installed at the end of this vertical drying oven to oxidize troublesome solvent and varnish fumes at John A. Roebling's Sons Corporation, Electrical Wire Division Plant. This installation has been operating now for over 4 years.

OXY-CATALYST, INC.

Industrial Division, Wayne, Pa., U.S.A.

Fume Elimination Processes and Equipment
Industrial • Automotive • Consumer Products

Oxy-Catalyst, Inc., Industrial Division, Wayne 13, Pa.
Please send me complete information on your catalytic installations:

☐ For fume and odor elimination ☐ For waste heat recovery ☐ Have your representative call

Name_____

Firm Name_____

Street_____

City_____ Zone No._____ State_____

For more data circle **348** on Reader Service Card

Chemical and mechanical pretreatments (such as blasting or etching) may be used to improve adhesion of the coating to the base material.

For more data circle **19** on Reader Service Card

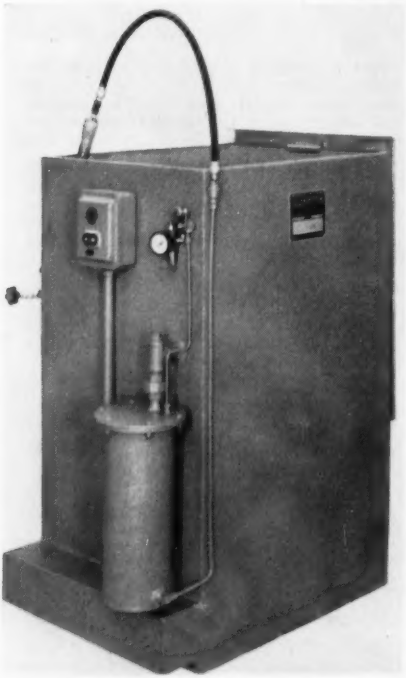
★ ★ ★

Vapor Degreaser

The Currier Co., 710 - 73rd Ave., Oakland 4, Calif., has announced Model 32-E Vapor Spray Degreaser. Compact, the machine is 28 inches long, 24 inches wide, and has a 24-inch-deep vapor level.

Currier's Model 32-E Vapor Spray Degreaser is equipped with a patented pneumatic leak-proof solvent spray system. The interior of the machine is coated with a corrosion-resistant zinc-based coating. Capacity is said to be in excess of 1,000 pounds of steel per hour.

For more data circle **20** on Reader Service Card

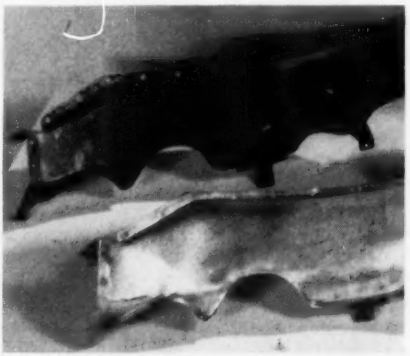


Currier Model 32-E Vapor Spray Degreaser

★ ★ ★

Alkaline Deruster

Ferlon, an alkaline derusting compound recently introduced by Wyandotte Chemicals Corporation, Wyandotte, Mich., is said to be especially useful in cleaning parts prior to electroplating, where, the manufacturer reports, it often eliminates the need of an acid dip and a rinse.



Stainless steel aircraft parts before (above) and after cleaning with Wyandotte Ferlon alkaline derusting compound: no etching

Ferlon is readily soluble in water. Strong solutions with high boiling points can be prepared.

Many applications have been reported for this material. Among them are cleaning stainless steel aircraft parts; removing rust and light scale; removing carbon and oxides from stainless steel; removing paint; as an aid to smut removal in difficult steel electrocleaning jobs; as a barrel finishing compound; to remove stains from steel, brass and copper alloys; to replace acid in electroplating.

REPORT FROM THE ASSISTANT CHIEF ENGINEER,
THE TIMKEN ROLLER BEARING COMPANY, COLUMBUS . . .

"We process 4,000 lbs. of rollers in one load with ALMCO barrel finishing equipment"

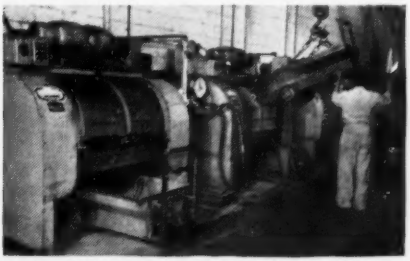
MR. FRED ALBRIGHT, Asst. Chief Engineer, the Timken Roller Bearing Co., Columbus, displays rollers processed by rugged Almco equipment.

AT COLUMBUS, OHIO, the Timken Co. runs three shifts on rollers in a range of sizes. After heat treating and oil removal, rollers go to the Almco barrel section for cleaning-up of insert identification, radius polishing and coloring.

Prior to this, the Timken Co. used other equipment that was costly to maintain and required much space. Its messy operation conflicted with good plant housekeeping.

ALMCO SYSTEM REQUIRED 50% LESS FLOOR AREA — In cooperation with Timken engineers, Almco designed special heavy-duty equipment that raised output to production requirements . . . replaced the older equipment with a clean, controlled operation . . . reduced floor area needs by more than 50%.

BARRELS RE-LINED ONLY ONCE IN 2 YEARS! Each of these heavy-duty Almco machines has two compartments holding 16 pan-loads of rollers weighing 250 lbs. per pan. TWO TONS of rollers are processed during each cycle! Yet in this highly abrasive operation, Almco barrels at Timken have been re-lined only *once* in two years.



Twelve Almco DB-400 units and a DB-50 serve Timken in various plants. Minimum space is required for high volume production . . . the plant floor stays clean and safe.

LEARN HOW MODERN BARREL FINISHING CAN IMPROVE YOUR PRODUCT — Find out how to improve product quality and appearance, save manpower and reduce deburring and finishing costs. Send your sample parts and specifications to Almco's new technician-staffed lab in Albert Lea, Minnesota. Or write on your company letterhead, requesting an Almco engineer to visit your plant.

SEND FOR FREE 52-PAGE BOOK

Full of facts and processes on barrel finishing. Includes detailed cost chart on finishing of typical parts. Send for your copy today.

ALMCO

DIVISION OF QUEEN STOVE WORKS, INC.

88 Marshall Street • Albert Lea, Minnesota

Sales and Engineering Offices in Chicago, Detroit, Los Angeles, Newark, New Haven, Philadelphia and London, England

For more data circle 349 on Reader Service Card

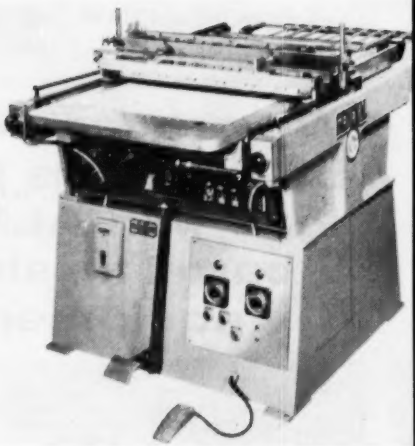
A bottle of detergent and rinse promoter packed in each container of Ferlon provides a blanket to prevent fumes when current is used; it also aids in cleaning and rinsing when no current is used.

For more data circle 21 on Reader Service Card

★ ★ ★

Silk Screen Press

The General Decorator Press Series "B" is especially useful in handling flexible sheets, warped or bowed stock, cloth, and other materials that are difficult to handle. Applications include printing of nameplates, signs, decals and so on, using polyester films and similar materials. Other applications include printed circuits, embossed materials and book covers, ceramic tiles, advertising displays, and other decorative and functional uses.



General Decorator Press, Series "B"

The machine requires one operator, who feeds and removes sheets from the front end of the press. It can be equipped with rear delivery. This optional arrangement permits sheets to be discharged directly into a drying system, such as the Thermo-Jet Dryer, which permits high-speed drying of screen process printing.

The General Decorator Press Series "B" is built in three models, with maximum sheet sizes ranging from 13 by 25 inches to 24 by 36 inches. Further details are available from General Research & Supply Co., 572 S. Division Ave., Grand Rapids 3, Mich.

For more data circle 22 on Reader Service Card

★ ★ ★

"Doped" Gold Processes

The development of Doped Gold Processes, utilizing group 3 and 5 elements, for use in germanium and silicon semiconductor applications, has been announced by the Precious Metals Division, Sel-Rex Corporation, Nutley 10, New Jersey.

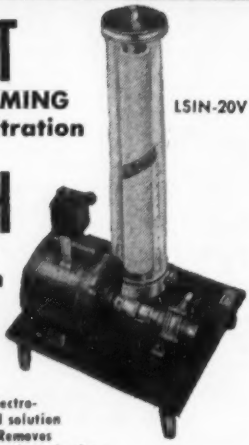
Doped with antimony or other elements, depending on the physical

Sethco Filters Fast

FROM START
SELF PRIMING
instant filtration

TO FINISH
Automatic
Backwash
Reversal
Switch

LSIN-20V



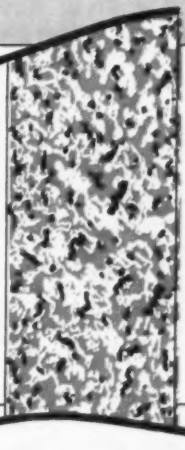
Models equipped with corrosive resistant alloys and materials for every electroplating and industrial solution from pH 0 to pH 14. Removes particles down to one micron in size.

Sethco Mfg. Co.
2292 Babylon Turnpike, Merrick, L.I., N.Y. MAyfair 3-4220

For more data circle 350 on Reader Service Card

POLY-NAM®

MULTI-COLORED TEXTURED FINISH



All with spray

All from can

ALL . . . at time

POLY-NAM . . . the one versatile finish you need to achieve two or more colors—simultaneously . . . from one container . . . and in a single spray.

You get varied and striking tone-on-tone effects—with interesting, textured dimension.

POLY-NAM goes on wood, wallboard, paper, metal and concrete—in a rich, semi-gloss finish. Air dries to touch in an hour; dries hard in four hours. Stands up under frequent scrubbing, and is resistant to wear and abrasion. Easily retouched.

SEA-LAC

Pat. No. 2591904

DURALAC CHEMICAL CORP.

84 LISTER AVENUE, NEWARK 5, N. J.

For more data circle **351** on Reader Service Card

properties desired, it is reported that these processes can be operated at room temperatures to produce bright, uniformly distributed gold deposits in required thicknesses, directly from the bath. According to the announcement, the Sel-Rex Doped Gold produces unusually dense electroplates.

For more data circle **23** on Reader Service Card

Spray-Mask Painting Machine

The 5M Seven Model Series Automatic Spray-Mask Painting Machine is designed for use in mask painting of small parts.

The manufacturer, Sepanski and Associates, points out that the 5M Series will be of special interest to finishers who have painting and decorating jobs involving a variety of shapes and contours.

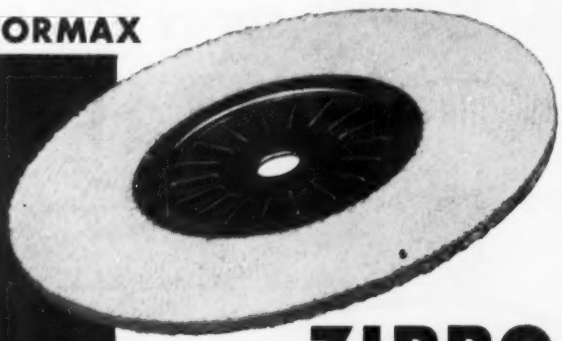
For special applications, this machine can be adapted to handle more than one part or one color at a time by using it as a multiple-station, or a multiple - color unit.

Three standard SG (stationary gun) Models are offered for the simpler types of spray-mask painting. These machines have 2, 3, or 4 non-oscillating guns, clamp mounted.

Four standard OGU (oscillating gun unit) Models are available. These units can be adjusted to handle simple or complex spray-finishing operations.

A rotary spray station is available on any of the seven 5M Series Models. For complete descriptions and specifications

FORMAX



ZIPPO
SISAL BUFFS

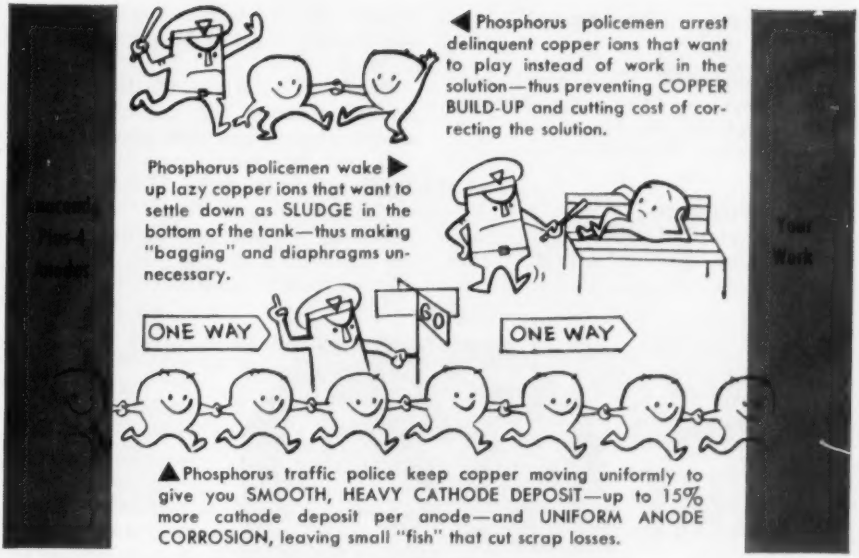
A Dual-Purpose Polishing and Buffing Wheel!

Call for Zippo Sisal Buffs when you have need for a fast cutting, heavy duty wheel to remove surface imperfections from ferrous metals. You will find they serve excellently to blend and smooth stretcher strains, orange peel, light die marks and polishing wheel grit lines. And—at the same time leave a bright surface finish.

Write for Descriptive Literature

FORMAX MFG. CORP.
DETROIT 7, MICHIGAN
"THE FOUR McALEERS"

For more data circle **352** on Reader Service Card


◀ Phosphorus policemen arrest delinquent copper ions that want to play instead of work in the solution—thus preventing COPPER BUILD-UP and cutting cost of correcting the solution.
Phosphorus policemen wake ▶ up lazy copper ions that want to settle down as SLUDGE in the bottom of the tank—thus making "bagging" and diaphragms unnecessary.
ONE WAY
60
ONE WAY
▲ Phosphorus traffic police keep copper moving uniformly to give you SMOOTH, HEAVY CATHODE DEPOSIT—up to 15% more cathode deposit per anode—and UNIFORM ANODE CORROSION, leaving small "fish" that cut scrap losses.

Here's why Anaconda "Plus-4" (Phosphorized Copper) Anodes cut electroplating cost and give you better work

The playful characters above give a perhaps over-simplified explanation of a laboratory development now saving acid-copper electroplaters, electrotypers, and electroformers a lot of time and money.

Metallurgists in The American Brass Company found that if copper used as anodes contains a small but precisely controlled percentage of phosphorus, all the copper moves uniformly through the acid-copper solution to the object being plated. The phosphorus seems to act like a policeman.

Anaconda "Plus-4" Phosphorized Copper Anodes are the result. They have been proving their superiority in acid electroplating tanks all over the country. Send in the coupon today.

57140

ANACONDA®

"PLUS-4"

(Phosphorized Copper)

ANODES

Made by **The American Brass Company**

The American Brass Company, Waterbury 20, Conn.
In Canada:
Anaconda American Brass Ltd., New Toronto, Ontario

Please give me details on how I can get a test supply of "Plus-4" Anodes sufficient to fill one tank.

NAME.....

COMPANY.....

ADDRESS.....

CITY.....ZONE....STATE.....

For more data circle **353** on Reader Service Card

request Bulletin No. PF-5 from Sepanski & Associates, 900 Clancy Avenue, N.E., Grand Rapids, Mich.

For more data circle **24** on Reader Service Card

★ ★ ★

Zinc Additive

A zinc plating additive that produces bright, fine-grained deposits when properly introduced to a balanced bath, has been introduced by Wagner Bros., Inc., 400 Midland, Detroit 3, Mich.

Produced as a powder that is dissolved in water, the additive can be used for barrel and rack plating.

In certain applications, the zinc addition agent, Iso-Brite ZB 567, can be employed with a liquid brightener, particularly in barrel plating stampings. However, the company says zinc additive can be used alone to produce a bright plate with good luster.

According to company engineers, an original charge of one pound of the zinc additive per 100 gallons of purified zinc solution will give excellent results—and under normal operating conditions, about 2 to 4 ounces of the agent per 100 gallons per day will maintain the brightness.

Most effective procedure in using the additive, the company points out, is to make the additions to the bath twice a day. It can be dissolved either in warm water or cyanide solutions.

The brightener, the company advises, will not produce bright deposits from a solution out of chemical bal-

For more data circle **354** on Reader Service Card

HAMMOND MODEL VRRO
Two-Spindle Variable Speed Lathe

STEP UP PRODUCTION — REDUCE FINISHING COSTS with Hammond DOUBLE SPINDLE LATHES

- No "down time" for one operator when the other changes wheel — each operator has his own motor, control and variable speed drive.
- Convenient Variable Speed dial is within arm's reach of the operator — no "climbing" around in back to change speeds.
- Wheel economy and better finish. As wheel wears each operator can increase speed — to maintain constant peripheral speed for uniform and better finish, maximum production and wheel life.
- Available in 3 sizes — two 5 HP, two 7½ HP or two 10 HP.

ALSO AVAILABLE IN WIDE SWING MODEL VRROW

Wide swing construction, with extended bearing housings and spindles, provides additional working space for large, bulky pieces.

Cost reduction is the need of the day — Write for catalog.

Hammond
OF KALAMAZOO
"Good Machinery Since '82"

Hammond Machinery Builders

1622 DOUGLAS AVE. — KALAMAZOO, MICHIGAN

For more data circle 355 on Reader Service Card

ance, or contaminated with impurities —either metallic or organic; thus if two normal additions do not provide good brightness out of the plating bath, or if the brightness range lacks normal staying power, chances are that the cause is elsewhere.

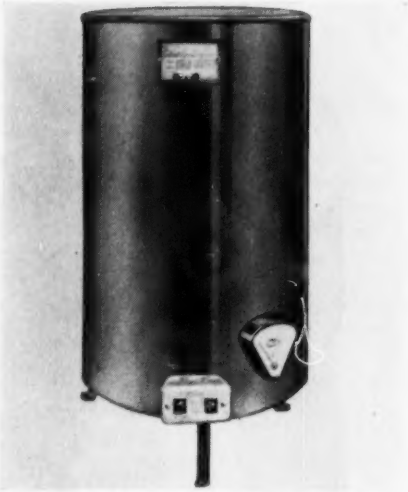
For more data circle **25** on Reader Service Card

★ ★ ★

Solvent Vapor Degreaser

Development of a solvent vapor degreaser designed for use in plant maintenance and light production has been announced by Tect, Inc., Cortland Ave. and Erie St., Dumont, N. J.

Described as Model No. 10 Solvent Vapor Degreaser, the machine is constructed of 14-gauge steel with a heavy zinc coating. A work rest and a lightweight, galvanized steel basket are also provided. The bottom is insulated with asbestos and fiberglass.



Tect Degreaser: for limited production

The Tect degreaser is heated by a 1250-watt Chromalox element, which may be connected to an ordinary 115-volt outlet. It comes equipped with an on-off switch and a thermometer, as well as condenser inlet and outlet hoses that can be connected easily to the water supply.

The unit will clean a minimum of 100 pounds of steel per hour.

It is suitable for use with Vythene, perchlorethylene, or trichlorethylene solvents. Only 1½ gallons of solvent are required for operation. The inside diameter of the unit is 14½ inches and the vapor height is 10½ inches.

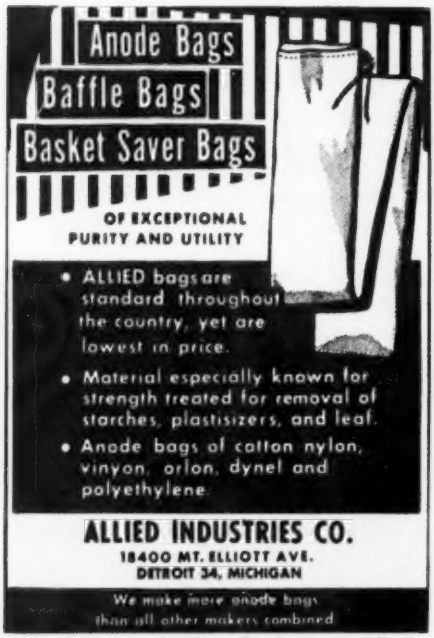
For more data circle **26** on Reader Service Card

★ ★ ★

Barrel Finishing Compound

Esbec No. 234, a neutral, powdered, non-abrasive barrel finishing compound, is said to have the ability to replace acid compounds and still produce good burnishing results; thus subsequent neutralizing operations can be eliminated, the manufacturer states.

The Esbec compound is useful in


Anode Bags
Baffle Bags
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OF EXCEPTIONAL PURITY AND UTILITY
• ALLIED bags are standard throughout the country, yet are lowest in price.
• Material especially known for strength treated for removal of starches, plastisizers, and leaf.
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ALLIED INDUSTRIES CO.
18400 MT. ELLIOTT AVE.
DETROIT 34, MICHIGAN
We make more anode bags than all other makers combined

For more data circle **356** on Reader Service Card

Why profits are bigger

when you plate with vacuum

1. Lower labor costs. Operating a CEC vacuum coater takes no special skills. Labor costs per piece are far lower than in traditional methods because the process is *fast*.

2. Eliminate buffing and polishing. A CEC vacuum coater lays down a surface that's bright without polishing. No further handwork is needed—just an easily applied protective lacquer.

3. Lower material costs. Ten cents worth of aluminum will vacuum-plate thousands of parts such as those shown here. Lacquers are relatively inexpensive, too.

Added durability

The *decorative* values of vacuum-plated finishes are well known. Now they can be remarkably durable, too. New coatings—recently developed epoxy lacquers, synthetic resins—can preserve those gleaming finishes indefinitely against abrasion, humidity, and other hazards.

To learn more about this new, and highly profitable process, write us for bulletins.

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Rochester Division, Rochester 3, N.Y.

formerly Consolidated Vacuum

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For more data circle **357** on Reader Service Card

removing rust, oxide stains, and light heat treat scale; removing the gray film left after long runs in aluminum oxide chips in preparation for burnishing; producing fast burnishing results (15 to 45 minutes) with small chips of steel burnishing media; reconditioning steel burnishing media, removing films which prevent good results and restoring lustre in about 50 minutes.

A data sheet on this product is available from The Esbec Barrel Finishing Corp., 192 Beech St., Byram, Conn.

For more data circle **27** on Reader Service Card

★ ★ ★

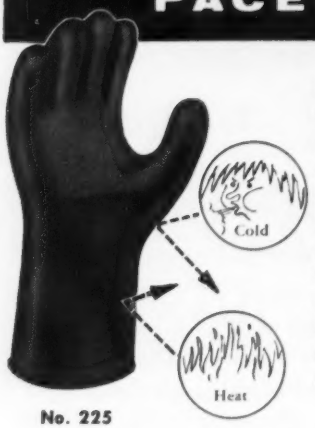
Rack Coating

An air-dry rack and maintenance coating identified as XL-8 has been introduced by G. S. Plastics Co., Cleveland, Ohio. This material is formulated to be applied by dip, spray or brush over coated or uncoated surfaces. No baking is required.

XL-8 is said to form a tight bond on ferrous and non-ferrous metals. The manufacturer reports that it has good resistance to abrasion, cuts and wear. Coating thickness builds up rapidly, the manufacturer states: one coat, 4 to 6 mils; two coats, 12 to 15 mils; three coats, 22 to 26 mils; four coats, 34 to 40 mils.

This corrosion resistant coating is reported to be useful in other applications in addition to plating and processing rack protection. It is effective

New "Hot 'N Cold" Stanzoil
PACEMAKER



No. 225

Features two 8 oz. shells with face-to-face napping for extreme insulation, coated with oil, acid, caustic and solvent resistant neoprene. Inner lining double napped and bar tacked at finger tips. Non-ravel lock stitch binding on gauntlet. *PIONEER will help you select the right glove for your job from the complete PIONEER line.*

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Pioneers in Hand Protection
For Over 35 Years

Please send me:

- ☐ The name of my nearest PIONEER Glove Distributor.
- ☐ 1956-57 PIONEER Industrial Glove Catalog.
- ☐ Your glove recommendation for job described in enclosed letter.

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Address _____
City _____ Zone ____ State _____
Signed _____

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a good start....

to a better finish

Better product finishes start with Bede Airless spray painting equipment. Ask for a demonstration on your product and see for yourself how you can get better product finishes with this new spray process. The Bede airless process DOES NOT atomize paint with AIR.

Bede airless is a proven profit maker.

INQUIRE ABOUT OUR AIRLESS TRAINING SCHOOL. NO TUITION. OPEN TO ALL.

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AIRLESS SPRAY COATING EQUIPMENT AND PAINT HEATERS

Jackson St., Dept. 1 YUkon 8-4473 Amherst, Ohio

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For more data circle 359 on Reader Service Card

Squeeze-On Applicator of G. S. Plastics' XL-8 Air-Dry Rack and Maintenance Coating is useful for repairing breaks in rack coatings

for use on ducts, outsides of tanks, spillage areas, tote boxes, funnels, and handling equipment such as hooks and baskets. It is also recommended for use on surfaces where baked-on coatings are not feasible.

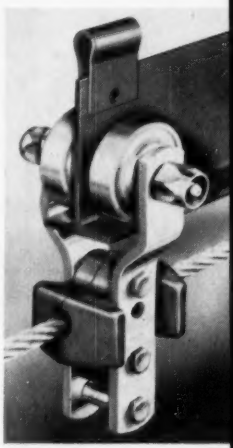
Literature is available from The G. S. Plastics Co., 15583 Brookpark Rd., Cleveland, Ohio.

For more data circle **28** on Reader Service Card

★ ★ ★

Heavy-Duty Conveyor Trolley

A heavy-duty trolley, specially designed for use with the ⅜-inch "Bush-Lock" Overhead Cable Conveyor under adverse conditions, has been developed by The E. W. Buschman Co., Cincinnati, Ohio.



Conveyor Trolley

Designated "T-10," this trolley is equipped with pressure - lubricated wheels, a special nut to protect the grease fitting, a completely enclosed back, and a felt hub seal. This design is particularly recommended for applications involving industrial washers, paint spray booths and other conditions where excessive dust, moisture or tem-

"WELL WORTH THE FEE"

"The course is well worth the fee you are asking; the know how of plating is so thoroughly explained that even the 'hard to expain to' type of worker can understand it. I have enjoyed each and every lesson. Once again, please accept my thanks", writes plating foreman L. J. Melvin of the Lincoln Engine Ring Co., St. Louis, Mo. You will thank me too! Write JOSEPH B. KUSHNER, ELECTROPLATING SCHOOL, 115 BROAD STREET, STROUDSBURG 40F, PA.

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POWDERED CHROMATES

Promat offers you a complete line of conversion coatings which are economical to use and designed to meet the requirements of individual specifications.

PROMAT

Many years of research and the use of the finest chemicals enables Promat to meet the highest standards in the metal finishing field. Send for free technical information and copy of "Promat's Progress."

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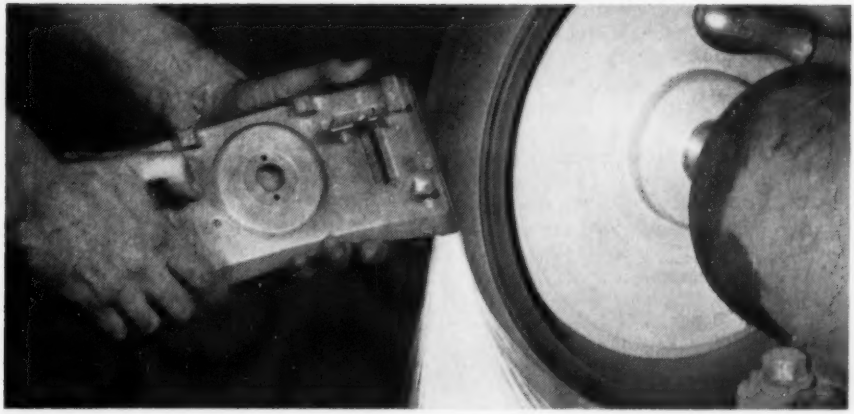
Manufacturing Plants Waukegan, Ill. Philadelphia, Pa. Gardena, Calif.

For additional information and technical assistance write Promat Division — Poor and Company

For more data circle **361** on Reader Service Card

Increase Pieces-Per-Belt *30% OR MORE* with MICHIGAN ABRASIVE BELTS



FACTS FROM TYPICAL MICHIGAN ON-THE-JOB FILE:

OPERATION: Backstand grinding-finishing die cast auto-trim parts.
FORMER BELT: Resin bond, 180 grit - 150 pieces per belt.
MICHIGAN BELT: RED COAT Resin bond, 180 grit - 250 pieces per belt.

66⅔% more pieces and nothing was changed but the belt!

Yes, it may be hard to believe but, it's true! And, as you know, nothing puts more value into sales dollars than a major cut in manufacturing costs! More and more people who *thought* they were getting peak production per belt are being amazed at the *additional* production they get from Michigan Abrasive RED COAT Resin belts, discs and sheets.

If you *think* you are getting maximum production and life from your present coated abrasives, you owe it to yourself, for the sake of profits, to test Michigan RED COAT Brand products in your operation. Only then will you *know* if your grinding and finishing costs are at rock bottom.

Michigan Abrasive is the fastest growing manufacturer of coated abrasives in the country . . . and no wonder! The proof is in *performance*. See for yourself what RED COAT, the sharper cutting, cleaner cutting, smoother finishing brand of coated abrasives, can do for you. Call your Michigan representative today or mail coupon for free, complete catalog and representative will call you for appointment. Do it soon. You'll be glad you did!

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Name_____
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Address_____
City_____ Zone_____ State_____

RED COAT BRAND

For more data circle 362 on Reader Service Card

peratures up to 150 deg. F. are encountered.

The T-10 comes in both two- and four-wheel models, with nominal capacities of 250 pounds and 375 pounds, respectively.

In addition to use in new installations, heavy-duty T-10's are recommended as replacement trolleys for existing ⅜-inch "Bush-Lock" Conveyor systems.

Complete descriptive literature on the T-10 can be obtained from The E. W. Buschman Co., 4516 Clifton Ave., Cincinnati 32, Ohio.

For more data circle **29** on Reader Service Card

★ ★ ★

Plastic Construction Material

A two-ply type light-weight plastic construction material for severe corrosive fume service has been developed by Heil Process Equipment Corporation of Cleveland.

This material, called Rigiply, is a fiberglass-reinforced laminate of thermosetting resins which is resistant to a wide range of chemicals, including both acids and alkalies.

Rigiply can be used for fume exhaust hoods, ducts, stacks, fume scrubbers, and tank covers for pickling, plating, and chemical plant operations up to temperatures of 250 deg. F.

This large duct used to exhaust corrosive fumes is fabricated of Heil Process Rigiply.

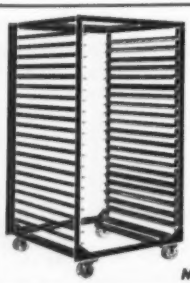
For complete information, write Heil Process Equipment Corp., Dept. CK, 12901 Elmwood Ave., Cleveland 11, Ohio.

For more data circle **30** on Reader Service Card

★ ★ ★

Zinc Base for Chromium Plating

The problem of rust forming on chromium plated steel surfaces may



USE WILDER RACK TRUCKS

FOR

INCREASED PRODUCTION

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GREATER OVEN CAPACITY

Write for further information.

WILDER MFG. CO., INC.

DEPT. H

MECHANIC ST. & ERIE R.R., PORT JERVIS, N. Y.

For more data circle **363** on Reader Service Card

Photo courtesy Mitchell-Bate Co., Waterbury, Conn.

What's being lowered here?

Costs! With Unichrome Coating 218X, of course!

SAVINGS START soon as users lower racks and baskets into Coating 218X. This approved vinyl plastisol provides insulation that lasts phenomenally long. It withstands toughest plating and cleaning cycles, even vapor degreasing cycles. It won't chip, tear, blister . . . won't contaminate baths. Coast to coast, platers know how it cuts maintenance to the bone, saves most time and money in the end.

If you want a nearby, experienced firm specializing in plastisol application to do the job for you, we'll gladly supply names.

UNICHROME

METAL & THERMIT
CORPORATION
General Offices: Rahway, New Jersey
Atlanta, Pittsburgh, Detroit, E. Chicago, Los Angeles
In Canada: Metal & Thermit-United Chromium of Canada, Limited, Rexdale, Ont.

For more data circle **364** on Reader Service Card

be a thing of the past if laboratory tests of a plating process developed by Wagner Bros., Inc., are borne out in a series of field tests now being conducted by an independent research organization.

According to the Detroit manufacturer of plating equipment and supplies, the process shows high promise —based on the company's preliminary testing.

These tests involved exposing a number of steel parts, plated by this method, to a 20 per cent salt spray bath at 100 deg. C. for a 192-hour period. No evidence of rusting, blistering, cracking or peeling was found.

Basically, the Wagner method involves the use of a zinc-base plate in the copper-nickel-chrome plating sequence.

The company says that the zinc base-plate principle has been common knowledge throughout industry for many years, but it had never before been successfully applied to the copper-nickel-chrome sequence, because of the affinity between zinc and copper. This affinity results in the molecular "blending" of the zinc and copper layers, which creates a gap between the surface of the part and the plated metals.

The gap, it is stated, results in the rapid cracking and peeling of the plated surface, which has prohibited the use of a zinc base plate.

The Wagner plating process apparently prohibits the molecular blending

Buschman

BUSH-LOCK

Cable Conveyor Components

Mechanized treating and finishing in just 27 ft. by 5 ft. of floor space —another space saving application of a versatile Bush-Lock Cable Conveyor, the low-cost package of standard stock components.

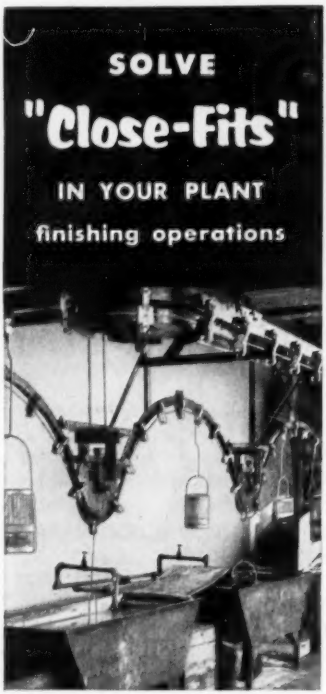
Sharp turns (from 7½" R)—plus the shortest possible dip in the industry for trolley type conveyors—eliminate space-waste and increase plant capacity in every type of industry.

Buschman specialists will cooperate with finishing equipment manufacturers making a survey of your plant requirements.

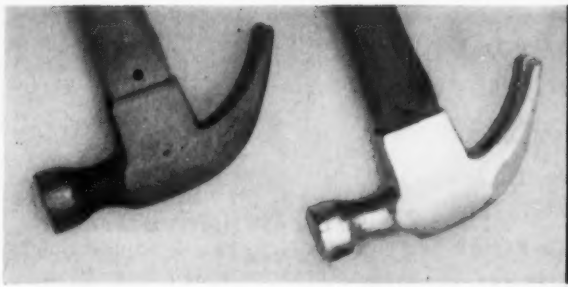
C-339-EWB

PRODUCE MORE FOR LESS with Buschman CONVEYORS

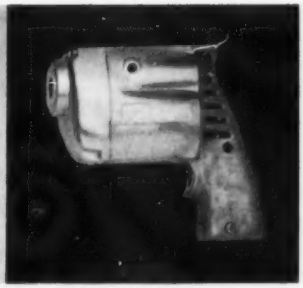
THE E. W. BUSCHMAN CO.
4516 Clifton Ave.
Cincinnati 32, Ohio



For more data circle 365 on Reader Service Card

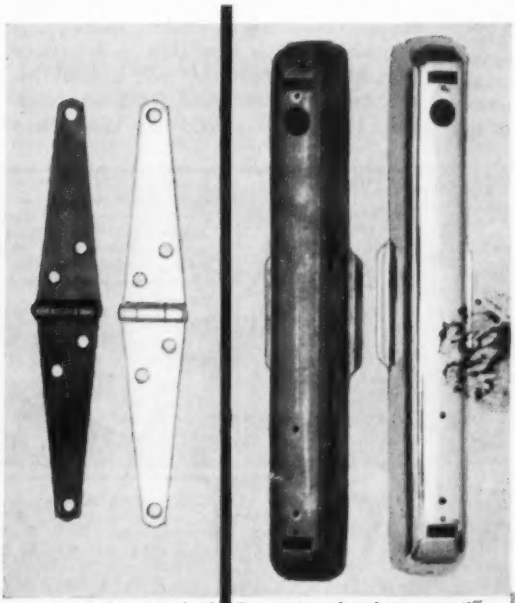


Shelf appeal can be increased for only 3¢



Finishing costs reduced to 12¢

If It Looks Good...It Sells Better



High class look for 4¢

Fluorescent lamp reflector finishing cost cut 62%

If you're looking for a way to increase the sales appeal of your products by adding a quality appearance at low cost, you should investigate vacuum coating.

While this modern process is not a cure-all, most likely you'll find it will add new life to the items you manufacture — and may cut your costs spectacularly, too! Brilliant, eye-catching, metallic finishes, in a wide range of colors, can be applied on plastics, metals, wood, glass, paper, fabrics and many other materials. Today's vacuum coatings are brighter than buffed and polished electroplating, cost less, and in some applications stand up better.

You don't have to take chances, either. Send us a sample of your product and give us details about its use. We'll tell you whether your application is a good one, show you how your product will look, and estimate your costs. Then, if you want, we'll supply a complete installation, guarantee its output, show you how to run it efficiently, and even train your operators. Write us today!

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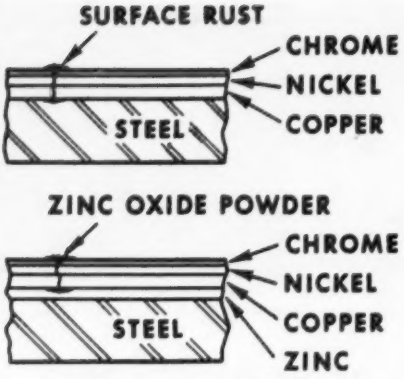


Sketches above show how zinc base plate prohibits the formation of rust on surface of steel parts in copper-nickel-chrome plating sequence. Upper sketch, without zinc base plate, illustrates how steel oxidizes and rust works up through pores in plated layers. Lower sketch shows how base layer of plated zinc oxidizes more easily than steel and forms a harmless white powder which can be removed from the surface with dry rag.

of the zinc and copper plated layers; thus it prevents the formation of any sub-surface gap, and eliminates surface cracks and peeling caused by such gaps.

For more data circle **31** on Reader Service Card

★ ★ ★

Pressure-Sensitive Trim

Gleaming trim can be applied quickly by using pressure-sensitive "Mylar," produced by Fasson Products, 250 Chester St., Painesville, Ohio.

Application of Fasson Mylar is made by peeling the paper off the back and pressing the material into place. The adhesive sticks to any clean, smooth surface.

Mylar, a DuPont polyester, resists stains, chemicals, abrasion, fading and tarnishing. It is available in a variety of embossed patterns and colors, including chrome, brass, gold and copper. It is flexible and can be printed

COPPERHEAD!
See these Copperheads, Har
We're still not getting anywhere w
our cleaning problem. I think I'll
Dick Relick at Pennsalt . . . he help
us straighten out our phospha
coating trouble last month, and
ought to have an answer
for this.
Yes, in fact we've batted this
all around our department. It's
possible you're using too strong
a cleaner for this job.
Too strong? Now
there's a switch!
Cleaning before porcela
enameling isn't a cut-and-dri
proposition. We think you ne
a mild, wetting-type clean
built to penetrate this compl
soil. We suggest you try a dru
of Pennsalt 85.

Embossed area on this control panel is produced by applying pressure sensitive Mylar.

and die-cut with standard printing equipment.

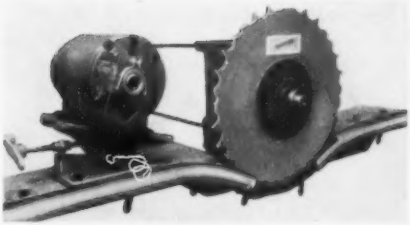
Samples and information are available from Fasson Products, 250 Chester St., Painesville, Ohio.

For more data circle **32** on Reader Service Card

★ ★ ★

Conveyor Overload Protection Device

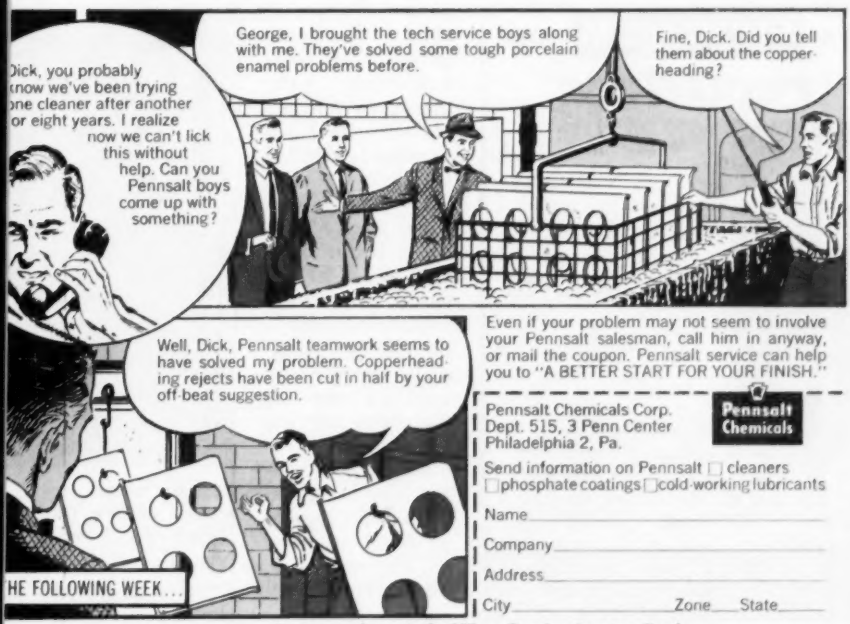
Chainveyor Corporation, 5618 E. Washington Blvd., Los Angeles 22, Calif., has announced the development of an overload attachment for conveyor power drives—a friction clutch mounted on the gear reducer shaft which engages directly with the drive sprocket face.



Chainveyor Overload Protection Device

The unit permits the drive sprocket to override in case of any overload and immediately relieves all driving force on the chain—even though the power drive continues to run.

For more data circle **33** on Reader Service Card


Dick, you probably know we've been trying one cleaner after another for eight years. I realize now we can't lick this without help. Can you Pennsalt boys come up with something?
George, I brought the tech service boys along with me. They've solved some tough porcelain enamel problems before.
Fine, Dick. Did you tell them about the copper-heading?
Well, Dick, Pennsalt teamwork seems to have solved my problem. Copperheading rejects have been cut in half by your off-beat suggestion.
THE FOLLOWING WEEK...

Even if your problem may not seem to involve your Pennsalt salesman, call him in anyway, or mail the coupon. Pennsalt service can help you to "A BETTER START FOR YOUR FINISH."

Pennsalt Chemicals Corp.
Dept. 515, 3 Penn Center
Philadelphia 2, Pa.

Pennsalt Chemicals

Send information on Pennsalt ☐ cleaners ☐ phosphate coatings ☐ cold-working lubricants

Name_____

Company_____

Address_____

City_____ Zone___ State_____

For more data circle **367** on Reader Service Card

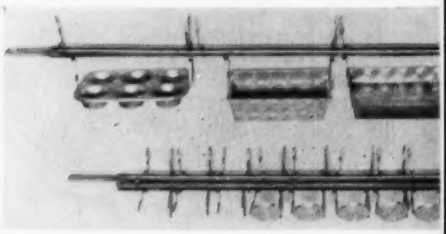
Titanium Anodizing Rack

An all-titanium anodizing rack that is adjustable for different types of anodizing jobs is available from Robe, Inc., Springfield, Va.

This rack is made of titanium "Z" sections, spot welded to a titanium base section to provide a series of grooves. In these grooves titanium "fingers," which act as contact points, can be moved and fixed in any position. The design makes the racks suitable for use in anodizing parts of varying shape and size.

A-55 titanium is used because of the metal's high corrosion resistance and formability.

Use of titanium also provides a rack that is not appreciably attacked by most anodizing solutions. In particular, hot solutions of caustic soda and bright dips (phosphoric acid plus nitric acid plus water) have little or no effect upon titanium.



Titanium Anodizing Racks: highly adaptable

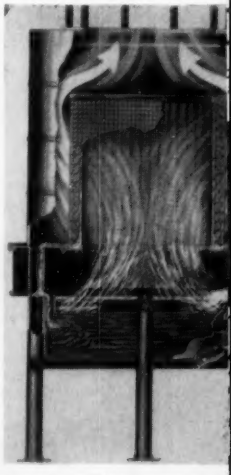
Stripping racks between cycles is eliminated, the manufacturer states, since the protective film which forms on titanium continues to conduct electricity. For more data, write Robe, Inc., P. O. Box 206, Springfield, Va.

For more data circle **34** on Reader Service Card

★ ★ ★

Air Filter

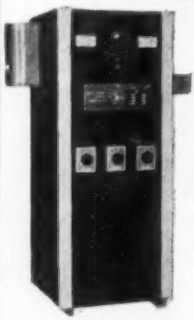
An oil-bath air filter said to combine high efficiency with low pressure loss has been announced by the Air-Maze Corporation, Cleveland, Ohio. The LPD achieves low-pressure-drop operation without moving parts or any outside energy supply, the manufacturer states. It is said to reduce energy requirements, making it possible to eliminate power-consuming motors and other moving parts.



Drawing shows operation of LPD Oil-Bath Air Filter

In the LPD filter, air is drawn in under a weather hood set low on the unit and is directed through an air-flow regulator tube to an oil control pan. Here the air picks up

GERMANIUM
rectifiers



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95% Efficiency at full load is standard with the new RAPID GERMANIUM RECTIFIERS.

RAPID ELECTRIC CO.
2877 MIDDLETOWN ROAD, N. Y. 61, N. Y.

For more data circle **368** on Reader Service Card

"PROOF of THE FINISH is in THE OVEN" ...to a great extent.

We're inclined to base this statement on the testimonies of the many manufacturers we have been privileged to serve.

High volume, high quality finish production is almost a necessity everywhere today.

Users of our oven designs and installations tell us they are accomplishing this with comparatively low operating costs.

This makes for satisfaction all around.

Typical Quotes from Many of the Satisfied Users of LANLY Ovens in Diversified Industries

"Our paint appearance and gloss has improved considerably since we installed the New *LANLY BAKE OVEN.*"

R. O. R.

"We bake twenty-two colors in pastel shades on metal. With the LANLY OVEN we have experienced highly satisfactory results in obtaining uniform color and complete baking."

K. W. B.

We'll welcome the opportunity to discuss your drying and baking operations with you without obligation.

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LANLY
FINISHING OVENS
THE LANLY COMPANY • 760 PROSPECT AVE.
CLEVELAND, OHIO

For more data circle 369 on Reader Service Card

droplets of oil which are carried up through a diffuser cone where air and oil are thoroughly mixed and air is scrubbed. The air then passes through the cylindrical filtration element, where dirt particles and oil droplets are removed, permitting only clean, oil-free air to flow to the engine, blower or compressor. Oil and the dirt collected flow down inside the filtration element and through oil-return pipes to the sump where dirt settles out. Clean oil is metered from the top of the reservoir into the oil control pan through calibrated holes in the sides of the pan.

The smallest of four models recommended for variable speed engines and compressors has a capacity range from 800 c.f.m. to 3,500 c.f.m. with a pressure drop of 0.6 inch water gage at the minimum and 4.8 inches at the maximum. The largest of the models for constant-speed engines and compressors ranges in capacity from 16,500 c.f.m. to 24,000 c.f.m. with a pressure drop ranging from 1.9 inches to 3.5 inches.

A bulletin describing the LPD oil bath filter is available from the Air-Maze Corp., 25000 Miles Rd., Cleveland 28, Ohio.

For more data circle **35** on Reader Service Card

★ ★ ★

Reciprocating Pump

A reciprocating pump of stainless steel that can withstand the effects of corrosive materials has been introduced by Balcrank, Inc., 41 Disney St., Cincinnati 9, Ohio.

Balcrank Reciprocating Pump

It is air operated. Balcrank engineers devoted several years to research before they developed a reciprocating pump with stainless steel parts that could be machined and even cast in molds.

This pump is unaffected by such materials as paint strippers and brighteners.

Pumps use seals and "cups" which have to be replaced periodically. With the Balcrank pump, this task can be done quickly.

The Balcrank stainless steel pump will handle fluids ranging in temperature from minus 30 deg. F. to plus 220

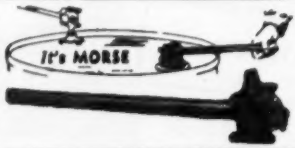
"GRIPALLOY"

. . . Attractive satin sheen primer in black and colors . . .
. . . Amazing tight adhesion to 25 different metals as reported by a large electrical manufacturer . . .
. . . Excellent resistance to Salt Spray, Gasoline and Solvents.

TENAX, Newark, N. J.
Lacquers—Enamels
Synthetics—Varnishes

For more data circle **370** on Reader Service Card

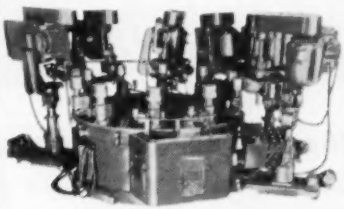
Send NOW for this FIT-ALL
DRUM PLUG WRENCH
Instantly loosens, tightens 95% all plugs or bungs in steel drums. Has 16" extra-strong steel tubing handle. Wgt. only 2 lbs. Order 1 or more today!



THOUSANDS IN USE saving time, labor, accidents!
SATISFACTION GUARANTEED..... $3.80
Non-sparking type $5.90
Plus Parcel Post
MORSE MFG. CO., Inc.
762 W. Manlius St., E. Syracuse, N.Y.

For more data circle **371** on Reader Service Card

Modern mass production methods demand speed, efficiency, and economy in finishing operations. PACKER-MATIC'S completely automatic polishing, buffing, and deburring machines are engineered to handle any type of production finishing problem. Let Packer show you how long runs, short odd lot jobs or a mixture of both can be handled with fast, low cost, more uniform results. Send blueprints or sample parts and let our engineers recommend a PACKER-MATIC to meet your requirements, or write today for more complete information.



*The bright touch on housewares is just one of many successful PACKER-MATIC applications.

PACKER-MATIC

THE PACKER MACHINE COMPANY • MERIDEN, CONN.

Pioneer Manufacturers of Automatic Polishing and Buffing Machines

For more data circle **372** on Reader Service Card

deg. F. at discharge outlet pressures of 1½ times the incoming air pressure. It will operate on an air supply of 30 to 200 pounds p.s.i. It pumps from one to 20 g.p.m., depending on the air pressure used.

Material is delivered in equal amounts on both up and down strokes of the pump, without pulsation.

All cups and seals withstand corrosive materials of various kinds.

The air motor which operates the pump is entirely separate, which makes it impossible for fluid being pumped to harm the air motor.

For more data circle **36** on Reader Service Card

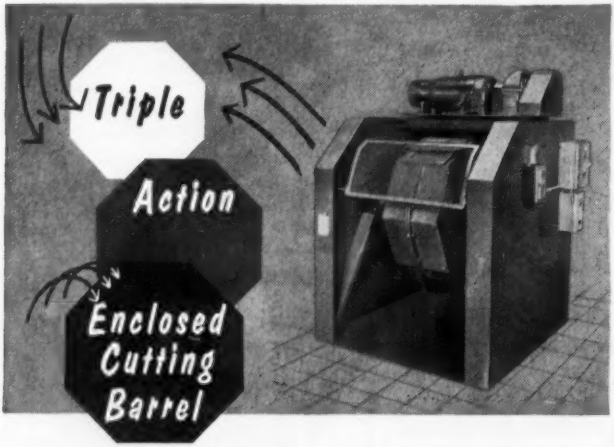
★ ★ ★

Acidic Rust Remover

Oakite Drycid, a powdered acid material that removes rust, scale and corrosion with safety (for metal surfaces as well as personnel), has recently been introduced by Oakite Products, Inc., New York, New York.

Added to water in concentrations of about eight ounces per gallon, Oakite Drycid is said to go into solution quickly and to be useful in many applications. Solutions of the compound may be used cold, or, for faster action, heated to 165 deg. F. This material is said to be effective in the removal of scale, scale-like deposits, rust, iron sulfides and other oxides.

Advantages of this material ininclude its mild, aromatic odor and non-fuming characteristics; and its safety on aluminum, brass and galvanized sur-



The Finest Cutting Barrel Ever Made

Hartford's great new enclosed barrel speeds deburring, descaling, polishing on screw machine parts, stampings, and castings. Hartford's unique *Triple Cutting Action* produces the highest degree of uniformity . . . faster . . . at lower cost. Extremely compact with every modern feature for efficiency, safety, and cleanliness. Available in 4 and 10 cu. ft. barrel capacities. Write for complete literature.

Hartford

PRECISION BALLS • RETAINERS
BEARINGS • TUMBLING BARRELS

HARTFORD STEEL BALL CO., INC.
121 Jefferson Ave., West Hartford 6, Conn.

For more data circle **373** on Reader Service Card

Meet the Sel-Rex Family of Industrial Precious Metals...

BRIGHT GOLD

A mirror-bright finish directly from the bath — more dense and twice as hard as ordinary gold. One gram does the job of two grams of conventional 24 K Gold.

Patented

SILVREX BRIGHT SILVER PROCESS

Crystal-clear solution that produces mirror-bright deposits. Economical to use—stable one-addition agent brightener. Easiest to control.

Patented

BRIGHT RHODIUM

Brilliant, fine-grained, non-tarnishing deposits. Best for all decorative applications. Available in phosphate or sulphate formulations.

RHODEX

The only rhodium electroplating process that yields compressively stressed deposits. Eliminates costly rejects due to cracking or peeling. RHODEX will not increase fatigue failures of base metal as ordinary rhodium electroplate does.

Patent pending

PUR-A-SALTS

Barium double metal cyanides. Restore contaminated cyanide plating baths to full, trouble-free production —"knocks out" carbonates, sulphates and chromates. Minimize waste disposal problems.

Patented

SILVER SOL-U-SALT

Non-dusting—safest and easiest to use. Cost-cutting—added directly to the bath without filtering. Won't upset silver to cyanide ratio.

Sel-Rex plating engineers are constantly searching for precious metal processes that will provide industry with the inherent characteristics of a particular precious metal but eliminating the weaknesses. The Sel-Rex Family of Precious Metals Processes to date are used world-wide, giving the electronic and electrical industries and product design engineers new and better plating tools.

Complete installation and servicing on all precious metals processes.

Write Dept. PF 8

Jet Plater

A complete versatile, small-volume plating unit for precious metal plating. Incorporates built-in rectifier with timer and other automatic features.

Precious Metals Division

SEL-REX CORPORATION

NUTLEY 10, NEW JERSEY

Manufacturers of Exclusive Precious Metals Processes, Metallic Power Rectifiers, Airborne Power Equipment, Liquid Clarification Filters, Metal Finishing Equipment and Supplies.

Offices: Detroit—Chicago—Los Angeles

For more data circle **374** on Reader Service Card

faces, when used as recommended. The material is shipped in non-returnable fiber drums.

Further information on this powdered acid compound is available from Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

For more data circle **37** on Reader Service Card

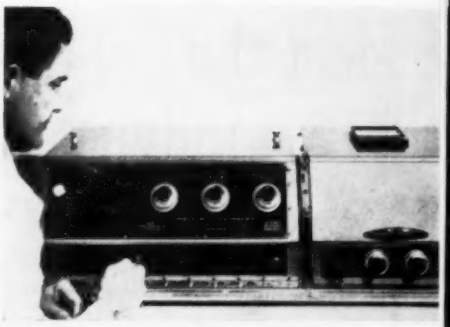
★ ★ ★

Color-Difference Meter

Gardner Laboratory, Inc., Bethesda, Md., has announced a color difference meter that features a high-sensitivity head and automatic standardization.

Designated Model AC-2, this instrument is said to be more accurate in making measurements on dark colors and slightly irregular surfaces, such as wrinkle finishes.

To keep the instrument standardized, a color standard is selected and its



Gardner Model AC-2 Color-Difference Meter

three known color values are fed into the three potentiometers on the exposure head. These values are locked in. Should any changes occur in the electrical system due to photocell fatigue, increase or decrease in illumination due to voltage fluctuations, such changes are automatically sensed. The servo motors are signalled, they go into drive position, forward or reverse, whichever the condition demands. The motors turn the neutral filters in the proper direction over the photocells and allow more or less light to impinge upon the cells until the proper current balance is restored.

Further details are available from Gardner Laboratory, Inc., Bethesda 14, Md.

For more data circle **38** on Reader Service Card

★ ★ ★

Coating for Vacuum Metalizing

Logo, Inc., 12933 S. Stony Island, Chicago, Ill., has introduced a top coat for vacuum metalizing metals. This material is said to have excellent properties for this type of application.

Vacuum metalizing on metal is the deposition of an alloy, usually aluminum, by evaporation in a vacuum chamber. To protect this thin film and give desired physical properties, a top

FUNCTIONAL FINISHES!!

If you require your coatings to accomplish some specific task — something beyond mere ornamental appearance or average longevity—

Try Us!

We make ACRYLIC, ALKYD, CELLULOSIC and VINYLOID coatings for a very wide range of specialized industrial applications.

The Varnish Products Co.

5204 Harvard Avenue
Cleveland, Ohio

For more data circle **375** on Reader Service Card

Bata cuts mold cleaning time in half with Pangborn Hydro-Finish

Bata Shoe Co., Belcamp, Md., used to clean shoe molds by pickling. For a better cleaning job, Bata replaced this process a year ago with Pangborn Hydro-Finish. Today this machine gives Bata top quality cleaning, does the job *in half the time* required by pickling and has required "no maintenance whatsoever." Also, acid disposal problems have been eliminated.

Says Mr. Albert Kotras, Research, "We thought it was sales talk but the Hydro-Finish has lived up to every claim the Pangborn representative made." Convinced by the performance of its Hydro-Finish machine, Bata management now plans to order a second one.

Today, through new design and use of air jet sluriators, Pangborn Hydro-Finish costs less originally, costs less to maintain and gives you easier handling and added efficiency. Write for Bulletin 1403 to PANGBORN CORP., 5000 Pangborn Blvd., Hagerstown, Md. *Manufacturers of Blast Cleaning and Dust Control Equipment.*

• • •

USE PANGBORN HYDRO-FINISH FOR:

Deburring • Surface finishing • Finishing threaded Sections • Improving cutting tool life • Maintaining dies and molds • Removing grinding lines • Removing heat treat scale • Preparing Surfaces for coatings, platings, etc.

Pangborn

BLAST CLEANS CHEAPER

For more data circle 376 on Reader Service Card

coating is usually applied. This application results in a brilliant appearance similar to electroplating.

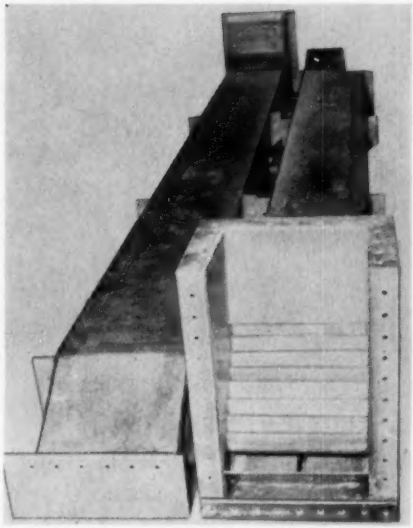
M-241, a sprayed and baked material, is claimed to impart a mirror like brilliance. The hardness of this coating is between 7H and 9H pencil hardness. Abrasion resistance is good. The humidity resistance equals 1,500 hours at 110 deg. F., 100 per cent R.H. Upon exposure to ultra violet light, the coating shows no tendency to yellow or darken, it is stated.

For more data circle **39** on Reader Service Card

★ ★ ★

Plastic Duct Section

Haveg Industries, Inc., 914 Greenbank Rd., Wilmington, Delaware, has recently introduced a vaned 90-degree elbow for incorporation in a corrosion-resistant fume duct system. Vaned sections are available for rectangular and circular systems, to cut down turbulence and speed flow for angle turns. Manufactured of polyester-glass-reinforced plastic, these ducts are said to offer high corrosion resistance and light weight. Field assembly by means of bolted flanges or by field welds is said to provide erection ease and speed.



Haveg 90-deg. elbow for a fume duct system

For more data circle **40** on Reader Service Card

★ ★ ★

Wire Stripper

Super X-Var, a chemical wire stripper formulated specifically for fast stripping action of organic films used for wire insulation, and manufactured by the Fidelity Chemical Products Corporation, 472 Frelinghuysen Ave., Newark, N. J., is now available in glass containers. The use of glass containers is said to increase stability of the product.

Newly installed turbine mixing equipment creates a more homogene-

TRUE BRITE BRASS SOLUTION

A foolproof solution which has been in use over 6 years in light and heavy production.

- Ready To Use—Just Add Water
- No Variance in Color
- Trouble-Free—Little Supervision Needed
- Low Cost—Additions only once a day

Available in a variety of colors. Will match your sample.

Write for technical bulletin and prices.

TRUE BRITE CHEMICAL PRODUCTS CO.
Box 31, Oakville, Conn.

For more data circle **377** on Reader Service Card

Save anode metal

by keeping baths clean with Red Label Darco®

Plating rejects . . . and consequent loss of scarce, costly anode metal . . . can be practically ended when you use Red Label DARCO activated carbon to keep plating baths clean.

The carbon preferred by electroplaters everywhere, Red Label DARCO is the *only* carbon developed exclusively for removing impurities from plating solutions. It wets quickly . . . cuts dust problems. It purifies economically . . . a little DARCO does a lot. Its high density reduces time and labor for dumping filters by up to 50%.

The DARCO distributor near you is a good man to know. He carries DARCO in convenient 10 and 50 pound cartons . . . and he can show you how to use it most effectively. We'll be glad to send you the name of the DARCO distributor nearest you.

DARCO IS MADE BY

CHEMICALS DIVISION
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE
In Canada: Atlas Powder Company, Ltd.
Brantford, Ontario, Canada

For more data circle **378** on Reader Service Card

Super X-Var Wire Stripper: quick action

ous mix, the manufacturer states, resulting in a product that offers faster stripping action and increased shelf life.

Super X-Var removes insulation from wire quickly, leaving the wire ready for soldering. The material is used as a dip, and then wiped off.

Descriptive literature and free samples are available by writing to the manufacturer.

For more data circle **41** on Reader Service Card

★ ★ ★

Ultrasonic Generator

Alcar Instruments, Inc., 17 Industrial Ave., Little Ferry, N. J., has introduced Ultrasonic Generator Model 2025, a unit designed for continuous commercial service. It can deliver 250 watts into a resistive load over the frequency range of 12 to 50 kilocycles.

The unit consists of a chassis on which are mounted high and low-voltage power supplies, an oscillator, and a power amplifier. Output impedance may be obtained at 38 ohms, 75 ohms, 150 ohms and 300 ohms. This Alcar generator also has a source of d.c. polarization, so that it may be used for either crystal or magnetostrictive units.

Alcar Ultrasonic Generator Model 2025

Amplitude and frequency controls are mounted on the front panel, along with a power-output meter.

Applications for ultrasonics include soldering, cleaning and mixing. Further information may be obtained from Alcar Instruments, Inc., 17 Industrial Ave., Little Ferry, N. J.

For more data circle **42** on Reader Service Card

★ ★ ★

Fan

A fan with airfoil-type blading has been announced by the Sturtevant Division of Westinghouse Electric Corporation. Several models designated as Series 300 fans are available with this feature.

Design of the fans plus the polyfoil-type blading is said to keep air-flow turbulence to a minimum.

CADILLAC
SELENIUM RECTIFIERS
6-48 volts — to 6000 amperes
Custom-built and Stock Models
One Year Guarantee
CADILLAC RECTIFIER COMPANY
539 Webster Ave. New Rochelle, N. Y.

For more data circle **379** on Reader Service Card

Bond TACK CLOTH

PACKED IN ROLLS OR IN BULK
JUST THE WAY YOU WANT IT!

Stays Soft and Tacky — A SPECK-FREE FINISH EVERY TIME — Now available in white or gold — in Three Different Types of Cloth.

There's a big difference in TACK-CLOTHS—that's why BOND processes three different meshes of cloth with several types of formulations to give you the cloth that best "fits" your special needs. You can get BOND TACK CLOTH packed just the way that suits you best, too—in 150 yard Rolls of 36" wide cloth or in handy Cartons.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up.

All BOND TACK CLOTH is Spontaneous Combustion Proof, Lint-Free and Wax-Free. Gives a sparkling speck-free finish every time. Clean and Sanitary. No waste.

IN ROLLS
Cut off any size piece as needed.

IN BULK
Size is 18" x 56"—folded to 4½" x 18" for ease of handling. Cut and folded—ready to use.
Also Individually Packed in Glassine Envelopes —144 to the carton—

TRY THEM AND COMPARE RESULTS. Samples gladly sent upon request.
A WARRANTY OF SATISFACTION IN EVERY CARTON

Bond® CHEMICAL PRODUCTS CO. 2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS
"The Tacky Wiper Specialist"

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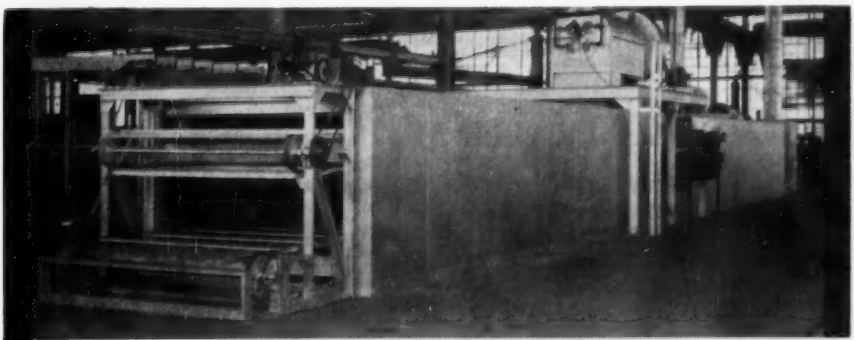

▲ *A continuous Double Strand paint drying oven with gas fired, recirculating air heater.*

carl mayer DRYING OVENS

- Guaranteed Uniform Temperature
- Long, Trouble-free Service

THE CARL MAYER CORP.
3030 EUCLID AVENUE • CLEVELAND 15, OHIO

A Few of Our Customers . . .

American Radiator Co.
Bendix Aviation Co.
Ford Motor Co.
General Electric Co.
General Motors Corp.
Glidden Co.
Mullins Mfg. Co.
North Electric & Mfg. Co.
Rheem Mfg. Co.
Westinghouse Electric Co.

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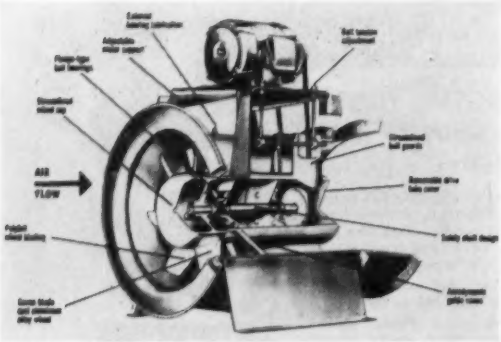

Cutaway view of a Westinghouse exhaust fan

The manufacturer recommends these fans for use in air supply or exhaust in chemical processing, ceramic and industrial finishing applications.

The fans are available in three drive arrangements: external V-belt drive, direct drive with motor inside the casing and direct drive with motor outside inlet opening. There are 14 sizes of fans with volume ranging from 1,700 to 100,000 c.f.m., wheel diameters from 15 to 72 inches and static pressures up to 3¼ inches.

Further information is available in Catalog 1110. Write to Westinghouse Electric Corporation, Sturtevant Div., Dept. 143, 200 Readville St., Hyde Park, Boston 30, Mass.

For more data circle **43** on Reader Service Card

Telephone collect for free brochure on

STRIPPING COPPER

with

McKeon's "Liquid Sulphur"

Economical, fast, non-electrolytic.

Sulphur Products Co., Inc.

McKeon Bldg., 621 W. Pittsburgh St., Greensburg, Pa.

For more data circle **382** on Reader Service Card

High-Temperature Masking Tape

A high temperature masking tape with better resistance to adhesive transfer and easier removal properties has been announced by Minnesota Mining and Manufacturing Co., Dept. L7-132, St. Paul, Minn.

3M High-Temperature Masking Tape: up to 400 deg. F.

Designed especially for critical high temperature masking conditions, the tape — "Scotch" brand masking tape No. 214 (Type 2MNB) can be used at temperatures up to 300 deg. F. for bakes up to eight hours in duration. It will withstand heat cycles of shorter duration up to temperatures of 400 deg. F., the manufacturer states.

The tape has a patented crepe paper backing and a firm pressure-sensitive adhesive.

This tape, in addition to its use in normal paint finishing can protect electrical parts during varnish dip and subsequent bake cycles and be used for outdoor masking for up to one-month duration.

For more data circle **44** on Reader Service Card

★ ★ ★

Drum Reconditioner

Lowe Engineering Company has introduced a small drum reconditioning machine for drum users.

Lowe's latest product is called the "Junior" Stripper-Buffer. It automatically removes paint, rust and dirt

Looking for more "shots per dollar" in vacuum metallizing coils?

By switching to the best coil design, vacuum metallizers have realized as much as 30% more shots per dollar from Sylvania Tungsten Coils. Why is this possible? Because Sylvania helps vacuum metallizers find the right coil to do their job most economically. Whether you buy ready-made coils or form your own from tungsten strand, Sylvania is ready to help you get maximum efficiency.

Sylvania coils are formed of high density tungsten strand manufactured to exacting standards of quality control. Sylvania Tungsten Strand is available in 3 to 7 ply with wire diameters of 0.020 to 0.600 inches per strand.

We invite you to write, outlining your specific requirements and problems.

SYLVANIA ELECTRIC PRODUCTS INC.
Tungsten and Chemical Division,
Towanda, Penna.

TUNGSTEN • MOLYBDENUM • CHEMICALS • PHOSPHORS • SEMICONDUCTORS

SYLVANIA

Lighting • Radio • Electronics • Television • Atomic Energy

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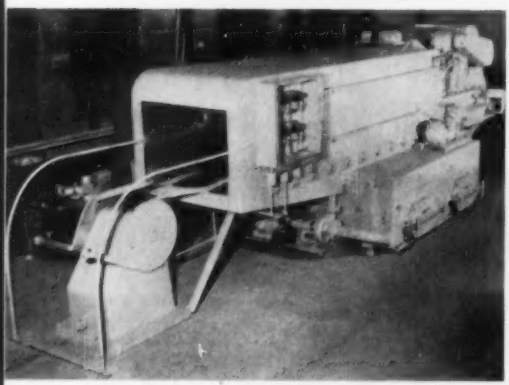


Drum Reconditioner: strips paint and rust

from the exterior sides and ends of 55-gallon drums, at production rates up to 2 drums per minute. It restores the original bare metal surface, wire brushed and ready for painting. An automatic drum loader feeds drums into the Stripper-Buffer.

For detailed information on this machine, write to Lowe Engineering Co., Lincoln Park 1, N. J.

For more data circle **141** on Reader Service Card

★ ★ ★

Surface-Finish Tester

A surface finish testing and measuring instrument that gives results either in microns or microinches has been announced by William J. Hacker & Co., Inc., 82 Beaver St., New York, New York.

Surface Finish Tester

The device computes these absolute readings electronically as a tracer scans the surface. It employs the standard tracer system and measures surface finishes of plane or curved surfaces, internal or external diameters and tapers, and arbor holes from ½ inch in diameter upward.

Any of the following values can be obtained quickly using this instrument: 1) The maximum peak to valley height of the roughness; 2) the average roughness (RMS); 3) the measurement of bearing area or bearing contact.

Basically the apparatus consists of a measuring head which contains the electrical feeler system, feed mechanism and the components for conversion of the electronic values into surface index standards. This unit is portable and is a complete measuring instrument by itself.

Other components of this apparatus are a measuring stand to accommodate the measuring head and the work piece to be inspected, an electric amplifier, and a profile recorder for a permanent record of the surface finish.

For more data circle **142** on Reader Service Card

★ ★ ★

Cathode-Rod Agitator

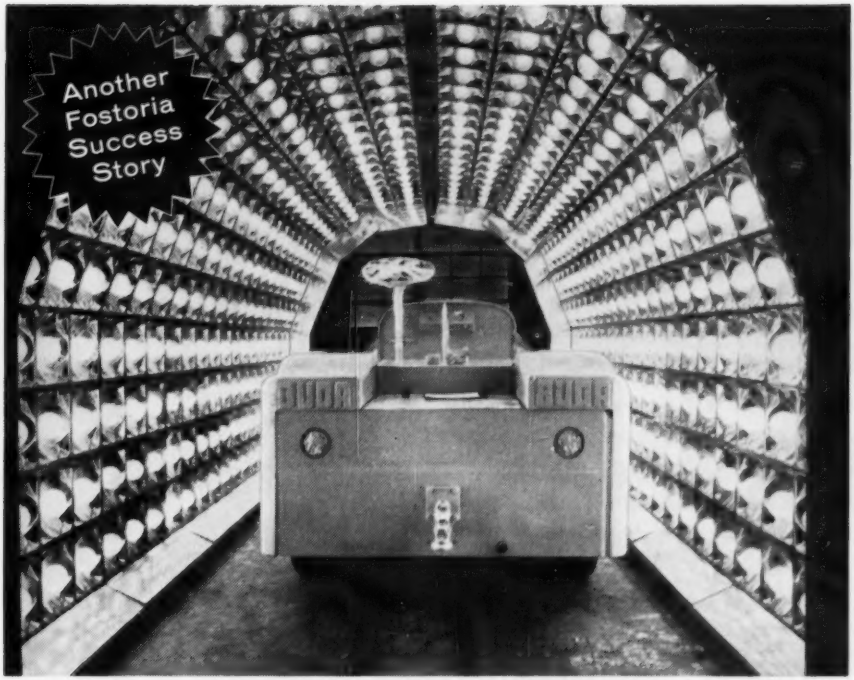
A cathode-rod agitator that clamps on an electroplating tank, without stands, brackets, switches or wiring is made by Randall Manufacturing Co.,

IT WILL PAY YOU

For phosphating, degreasing, plating, cleaning, drying, etc., it will pay you-and pay you well-to investigate and USE the modern Dean Thermo-Panel Coil which TAKES THE PLACE of old-style pipe coils. Bulletin 355-52 pages-tells all about it. Ask for a copy.

DEAN THERMO-PANEL COIL DIVISION
DEAN PRODUCTS, INC. 622 Franklin Ave
BROOKLYN 38, N. Y. Tel Sterling 9-5400

For more data circle **384** on Reader Service Card



Infrared drying lets you drive this Allis Chalmers truck *10 minutes after you Spray!*

Until Fostoria engineers were called in by the Allis-Chalmers Buda Division at Harvey, Illinois, their newly painted lift trucks and tractors took from 8 to 48 hours to dry by air. Production flow was unsteady. Units piled up in drying area.

Now, fully equipped trucks minus only the seats—with gas tanks full—move through an 18-foot Fostoria infrared oven for a thorough paint-drying that takes *only 10 minutes!* Type G-30 infrared lamps in their Fostoria-engineered oven have a total connected load of 100 KW.

Fostoria's fast, uniform infrared heating has improved production astonishingly, Allis-Chalmers officials say, while maintaining their top quality finish. The radiant oven gets more work done at lower cost.

One of Fostoria's experienced sales engineers in your area will be glad to give you latest facts on our radiant equipment widely used for heating, degreasing, drying, baking and other industrial processing. He can also arrange a convincing demonstration in your plant if you are interested. See your directory or write us for his name.

Write for free 20-page book, "Radiant Heat—Applications Unlimited"

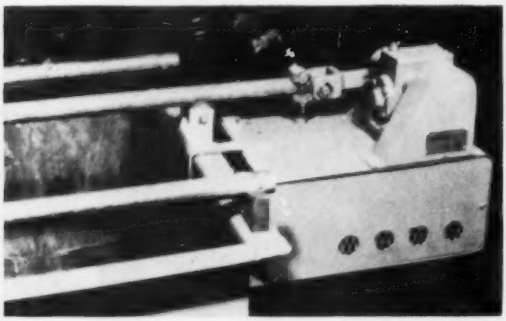
FOSTORIA PRESSED STEEL CORPORATION
Dept. 32, Fostoria, Ohio

INFRA-RED fostoria SYSTEM

5516 A

Pioneer manufacturer of radiant equipment—components and complete ovens

For more data circle **385** on Reader Service Card



Ramco Model V-2 Double Cathode Agitator

Inc., 1373 Lafayette Ave., New York 13, N. Y.

The cathode connectors are adjustable for ½-inch to 1½-inch rods. Leveling bolts permit accurate alignment. No insulation is necessary. The motor is enclosed and fully protected against liquid splashing and fumes.

Models are available in both single rod, with two rollers, and double rod, with four rollers. The design permits plating at higher current, prevents burning and throws off gas bubbles, resulting in brighter deposits.

Bulletin on Ramco Cathode Rod Agitators for electroplating is available from Randall Manufacturing Co., Inc., 811 Edgewater Rd., New York 59, N. Y.

For more data circle **143** on Reader Service Card

★ ★ ★

Thermostat

Teflon Thermostat

An immersion-type thermostat with a chemically inert power element has been introduced by the Elkhart Controls Co., Elkhart, Indiana. The power element extends into the solution and is constructed of Teflon.

This thermostat, called the Eltemp Model T-34, can be safely used in any known chemical solution in its temperature range. The unit operates on a differential of 2 degrees or less and is adjustable from 70-210 deg. F. The heating or cooling source is regulated by a Minneapolis-Honeywell, Type "Z," double-throw micro-switch.

For more data circle **144** on Reader Service Card

★ ★ ★

Contact Wheel

A contact wheel recently introduced by Chicago Rubber Co., Chicago, Ill., features a tire-flanged total-disc as-

QUALITY EQUIPMENT
PRICED RIGHT AND READY FOR IMMEDIATE SHIPMENT

BUFFING AND POLISHING EQUIPMENT

100 Hammond—Divine—U. S. Electric—Holland — Standard Electric — L'Hommedieu single speed and variable speed buffing and polishing machines. 1 to 20 HP.

6 Rotary Machines: Hammond—Acme—Packermatic.

Complete buffing systems for above machines, including hoods, cyclones, dust boxes, pipes, motors and blowers; various sizes.

Semi-automatic machines: Buffalo—Hammond Acme—Divine—Production.

ALL EQUIPMENT IN STOCK
INSPECTION INVITED

all quoted subject to prior sale.

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TUMBLING BARRELS *Last Longer* with Acme-Fisher RUBBER LININGS

Deburring and finishing are rough on ordinary tumbling barrels.

Acme-Fisher Rubber Linings for tumbling barrels are tough, abrasive and chemical resistant. Specially formulated rubber linings are bonded securely to the inner walls, then cured, to form tough linings that will provide long service for the roughest deburring and finishing operation.

48 HOUR SERVICE
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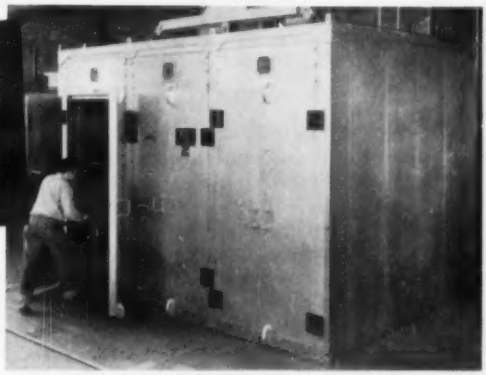
You're SURE of UNIFORM Drying—FAST

ROCKWELL *Recirculating* OVENS



Uniform distribution of controlled, high velocity, recirculated, heated air assures faster drying or baking at precise temperature.

Investigate the oven with the built-in heating "know-how." Write for Catalog.

Made in wide range of standard electric-, gas-, oil- or steam-heated, cabinet, rack or truck types and in special batch or conveyor types.

W. S. ROCKWELL COMPANY 2907 Eliot Street, Fairfield, Conn.

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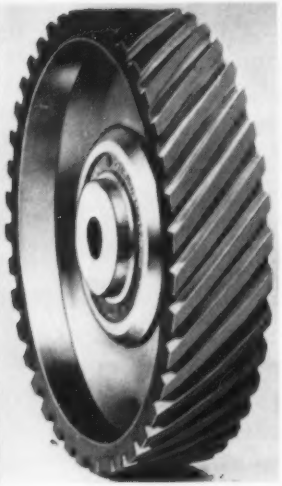


Chicago Rubber Contact Wheel

sembly on steel, which is said to reduce the necessity of using more costly aluminum hubs. The assembly is made of cold-rolled, drawing quality steel, with welded construction.

Wheels are available in many sizes in plain or serrated faces in all hardnesses, for use with all types of abrasive belts. Designed for use in many applications, the wheels are made of oil-resistant rubber, and are said to produce longer belt life. Further information is available from Chicago Rubber Co., 651 S. Market St., Waukegan, Ill.

For more data circle **145** on Reader Service Card

★ ★ ★

Automatic Blast Unit

A pressure blast wet blasting unit with attachments to make automatic operation possible has been announced by the Cro-Plate Co., Inc., 747 Windsor St., Hartford 1, Conn.

The standard 30- by 30-inch blast cabinet has been fitted with an air-hydraulic cylinder on the right of the cabinet for motivation of the blast gun cluster through a horizontal path. A small gear motor positioned on the left rotates a simple work-holding chuck within the cabinet. The adaptation of the manual equipment was completed by eliminating the armports at the front of the cabinet and providing a loading door.

Automatic Pressure-Blast Wet-Blast Unit

The unit is said to be suitable for blasting small internal diameters and short outer diameters on cylindrical parts.

For more data circle **146** on Reader Service Card

★ ★ ★

Cold Solvent Emulsion Cleaner

Octagon Process, Inc. has developed a general-purpose cold-solvent emulsion cleaner for cleaning of ferrous and non-ferrous metal parts at room temperature.

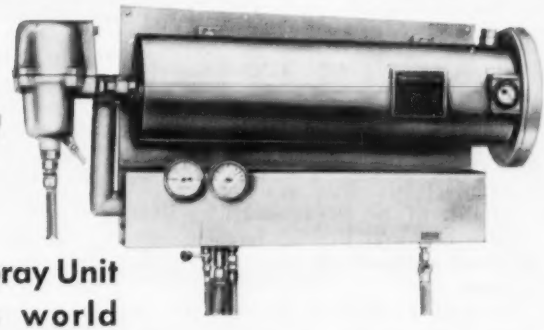
Called "Mighty-Mulse 563," it removes lubricating oil, grease, buffing compounds and general soil found in metalworking operations. Oils and greases dissolve in the solution and are emulsified when rinsed in water. Parts with slotted or tapped holes or with irregular openings or crevices can be cleaned easily with the cold solvent cleaner, it is stated.

Mighty-Mulse 563 is used at temperatures of 70-90 deg. F. Parts are left in the tank from seconds to minutes depending upon the type of soil encountered. In many cases, it is the

THERM-O-SPRAY

Trade Mark Reg. U.S. Pat. Off.

HOT SPRAY UNITS



—the leading Hot Spray Unit used all over the world

Reduce production costs—obtain better finishes!

THERMOSPRAY COMPANY, INC.

60 East 42nd Street, New York 17, N. Y.

In Canada: Scandia Supply Co., Ltd., 376 Craig Street W., Montreal

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BISON CORPORATION

BUFFS

Air-cooled VENTEX buffs, with permanent or removable metal centers are available for every job!

BUFFS • CLEANERS
COATED ABRASIVES
POLISHING WHEELS
ANODES • HEAT TREATING PRODUCTS
EQUIPMENT AND SUPPLIES •
COMPOSITIONS

Precision manufactured on latest, modern equipment in the BISON Canton plant — assuring uniform quality.

Distributors, jobbers! Territories open! Write for details!

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practice to leave a complete batch of parts in the tank until they are needed.

After soaking, parts are rinsed in water, warm if possible, or pressure sprayed. They are then removed, clean and ready for further work, repair or assembly.

Mighty-Mulse 563 is said have long service life, and if solid particles are removed regularly, it may be used for months.

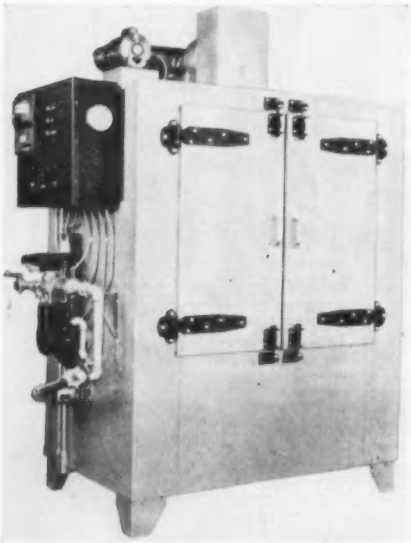
Octagon Fact Sheet No. EC-563 on Mighty-Mulse 563 will be sent on request. Write Octagon Process, Inc., 15 Bank St., Staten Island 1, N. Y.

For more data circle **147** on Reader Service Card

★ ★ ★

Portable Oven

The Carl Mayer Corporation, Cleveland, has introduced a portable oven with a recirculating heating system and automatic temperature controls.



Carl Mayer Portable Oven: 500-1,000 deg. F.

Six models are in production. Temperature ranges within the six models are from 500 deg. F. to 1,000 deg. F. Oven sizes range from 20 by 20 by 20 inches to 26 by 38 by 50 inches.

Specifications and performance data are available from The Carl Mayer Corporation, Dept. G, 3030 Euclid Ave., Cleveland 15, Ohio.

For more data circle **148** on Reader Service Card

★ ★ ★

Pressure Cup

The development of a Pressure Cup designed to be used with the Binks Model 8 Spray Gun has been announced by the Binks Manufacturing Company, Chicago, Ill.

R-618 Pressure Cup on Binks Model 8 Spray Gun

This cup, known as the Binks R-618, has a knurled grip at the bottom of the cup, which simplifies fastening of the cup to the gun. It is designed to eliminate slippage which prevents perfect sealing, the manufacturer states.

Imperfect seals frequently cause paint loss, and paint drippage from the cup on the surface being sprayed, causing work spoilage.

For complete information regarding the R-618, write the Binks Manufacturing Company, 3118-40 Carroll Ave., Chicago 12, Ill.

For more data circle **149** on Reader Service Card

★ ★ ★

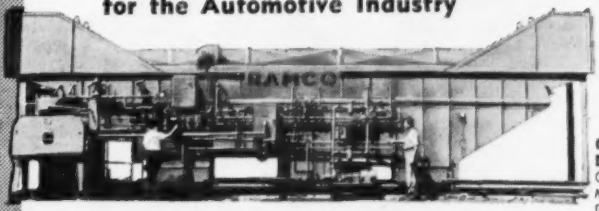
Protective Plugs

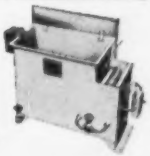
The problem of redrilling and retapping holes after spraying, dipping, plating or anodizing can be eliminated

RAMCO degreasers

ANOTHER RAMCO PRODUCT

from Laboratory Units to Giants for the Automotive Industry





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GIANT FORD DEGREASER
Courtesy Ford Motor Car Co., Detroit

Call on our engineering department for the latest in ULTRA-SONIC CLEANING.

Send for FREE CATALOG. Call your nearest Ramco engineer and have your metal cleaning equipment SERVICED AT NO CHARGE.

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Specialists in the Unusual

Rhodium ELECTROPLATING SOLUTIONS

Technological knowledge acquired through many years of experience, plus special processes and equipment, assure the high quality of our Rhodium Plating Solutions.

Recommended for contact surfaces of switches, waveguide parts and other electrical applications, such as printed circuits...Can be applied in extremely heavy deposits, up to 100 milligrams per square inch.

Rhodium plating provides the advantages of whiteness, lustre and corrosion resistance of a precious metal.

Consult our staff, without obligation, about your specific plating problems.

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121 SOUTH COLUMBUS AVENUE • MOUNT VERNON, NEW YORK

SINCE 1901

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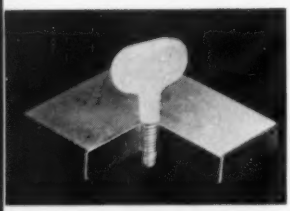


Plastic plug: keeps holes clean

through use of polyethylene plugs called Poly-Plugs, made by Plastic Molded Parts, Inc. The plugs are pressed or screwed into the holes of the parts to be processed. After processing, the Poly-Plugs are removed, leaving holes clean and ready for assembly. Plugs can be used as many as 20 times.

Standard sizes are available for all tap sizes from No. 1 to ½ inch. Plugs can be made in plastics required for special conditions. Literature is available from Plastic Molded Parts, Inc., 1224 Fifth Ave., East McKeesport, Pa.

For more data circle **156** on Reader Service Card

★ ★ ★

Stacking Baskets

Stacking Baskets

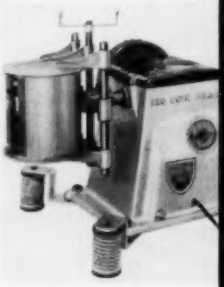
Stacking baskets for bulk parts handling have been announced by Wire & Iron Products, Inc., 1721 Sixteenth St., Detroit 16, Mich., under the trade name "Eezy-Stak."

Fabricated of flat expanded metal, Eezy-Stak baskets are of open mesh construction for quick drainage and easy cleaning. A patented interlock handle provides safe, convenient stacking and compact parts storage. Inside dimensions are 12 by 20 by 5½ inches.

For more data circle **157** on Reader Service Card

Paint Conditioner

The Red Devil Paint Conditioner, designed to freshen paint, is manufactured by Red Devil Tools, 2400 Vauxhall Rd., Union, N. J. Red Devil Conditioners are used in conditioning and mixing industrial finishes, printer's inks, lacquers, special color blends and other liquid materials. Many industries are also using them to tumble small parts and castings.



Paint Conditioner

To operate, a can containing material to be conditioned is placed between clamps of the can holder, which has receding, concentric rings to hold various sized cans. Once in place, the can is held between the clamps by a screw handle. The switch is turned on, and an automatic timer turns off the current when the job is complete.

The line of Red Devil Conditioners consists of four sizes.

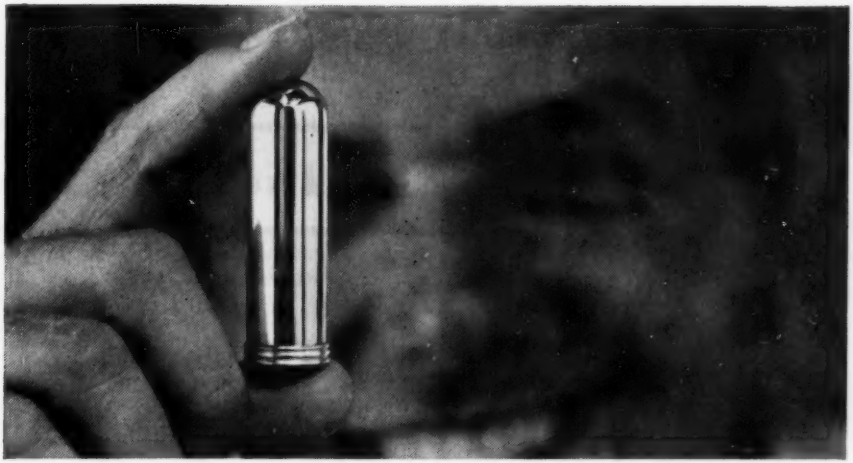
The No. 30 Conditioner handles ¼-pint to one-gallon cans. It comes equipped with a ½-h.p. motor. Employing a patented eccentric action, it operates at a rate of 1,350 shakes per minute. Average conditioning time is about two minutes.

The No. 30D Conditioner handles ¼ pint to 1½ gallon cans.

The No. 33 Conditioner handles one- to five-gallon cans. It employs a three-way action. With can upright, upside down or on the side, it agitates at high speed upward, downward and outward.

No. 34 Conditioner is a laboratory model. It holds from ¼-pint to one-quart cans.

For more data circle **158** on Reader Service Card



Brighter finish costs less with NIALK® TRICHLORethylene

What do you do when a part that's supposed to be bright and glossy comes out of the vapor degreaser dull—tarnished—unacceptable for finishing?

Faced with this problem, The Plume & Atwood Mfg. Co., Thomaston, Conn., switched to NIALK TRICHLORethylene.

Result: immediate improvement. Parts come out of the degreaser untarnished and immediately ready for further processing.

No more sour baths

Solvents previously used at P and A had to be dumped *every three weeks* to keep the degreaser bath from going sour. The first charge of NIALK solvent functioned without trouble for *nine weeks.*

At this point P and A installed newer degreasing equipment. Since then, NIALK TRICHLORethylene *has remained in service more than six months without once going sour.*

Only NIALK has psp

This example shows why you get *more effective, lower-cost* degreasing when you use NIALK TRICHLORethylene with **psp**—*permanent staying power.*

You *never* have to replenish the neutral stabilizer in NIALK. After many distillations, it's still there—working to prevent acid formation and other causes of breakdown. You go much longer, and degrease many more parts, between clean-outs.

For better degreasing, do this

See for yourself how you can keep *your* degreasers operating efficiently with NIALK—long after other solvents have lost their punch. Write us today on your business letterhead for the complete facts, including a resumé of comparative metallurgical tests on five leading brands.

HOOKER ELECTROCHEMICAL COMPANY
1408 UNION STREET, NIAGARA FALLS, N. Y.

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Page 138

News of the Industry

New plants . . . company news . . .
new positions . . . meetings . . . necrology . . .

NEW PLANTS

The **Naz-Dar Company**, manufacturer of silk screen inks and supplies, recently broke ground for a new plant in the industrial section of Goose Island, just northwest of Chicago's loop. The Naz-Dar plant will be the first plant in the world built exclusively for the manufacture of silk screen inks and sundry supplies.

Plans for the new building call for an explosion-proof mixing and storage vault, to be used for handling volatile chemicals. Construction throughout the plant is to be semi-

Naz-Dar officials gather for ground-breaking ceremony at new Cherry St. plant. From left to right, Kenneth Wittleder, advertising; Eugene Beaudart, director of research; Peter Jankowski, production control; John Pottage, vice president; J. V. O'Brien, Naz-Dar Canada; Robert Doran, president; and Seymour Rieger, who is the plant superintendent.

explosion-proof, with extra thick bearing and foundation walls. A complicated system of fire-prevention controls will be installed.

The laboratory and research facilities in the Cherry St. plant will be greatly expanded.

★ ★ ★

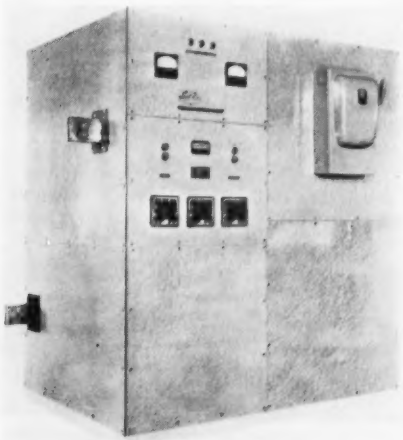
A new plant for the manufacture of grinding wheels will soon be built by **Norton Company.** When completed in mid-1959, the five-acre plant will contain the most modern facilities for making organic-bonded grinding wheels. This plant, to be known as Plant 8, has been designed for straight line production of wheels up to 30 inches in diameter.

COMPANIES

Sel-Rex Corporation, Nutley, N. J., has announced lower prices for its entire line of germanium rectifiers.

Sel-Rex states that the lower prices result from increased production, which permits taking advantage of large-quantity discounts on the purchase of various components.

A new catalog sheet is being prepared for the complete line of Sel-Rex germanium and selenium rectifiers. It will be distributed to anyone interested in rectifiers, on request.



Sel-Rex Germanium Rectifier: lower prices. Above model is used for anodizing by automotive manufacturer. It is rated at 18,000 volts, 5,000 amperes, d.c., has remote controls, tap switch, water-cooled construction.

★ ★ ★

A program for adaptation of present products to new applications can be a profitable venture for many firms in this competitive era, Henry M. Kidd, vice president-sales of **The DeVilbiss Company,** told members at the recent annual meeting of the Equipment and Tool Institute in Detroit.

"With the rise in costs of labor and materials, it is essential for a manufacturer to get maximum production from his facilities," Mr. Kidd declared.

The retiring chairman of the Institute's executive committee, Mr. Kidd spoke on "Product Analysis for Market Expansion" in opening a panel discussion on "Planning for Profits."

He revealed that his firm, a manufacturer of spray finisning equipment with headquarters in Toledo, Ohio, has established a separate department charged with "taking a long look at all our products, breaking them down into their components, and then attempting to find where all or some part can be used."

"Trade magazines, newspapers and research bulletins, when carefully read, provide valuable leads to new markets," he said.

He cited several examples of the success of his company's program.

A hand oil gun used in industry was adapted for marking timber. Previously a man on horseback forced his way through underbrush to daub paint with a brush on trees to be cut. A lumberman can now use his modern hand gun to target trees.

A medicinal spray was supplied with special fittings to permit spraying a chemical to remove corrosion from hard-to-get-at electrical contact points in TV sets, radios and other electronic devices.

A purse perfume atomizer was

adapted to provide, when desired, odorants to be blown out by the fan of room air conditioners to overcome staleness and smoke.

A small air compressor was combined with a large atomizer to provide a method of wafting such odors as fresh-ground coffee and roasting peanuts in commercial establishments, after research showed that smells were a powerful stimulant to buying.

"All these," Mr. Kidd asserted, "provided new markets for basic DeVilbiss products. In establishing our program we set up three obvious requirements: Can we make it? Can we make it in volume? Can we make it at a profit?"

"Once those questions are answered, our special department then prepares a study which covers problems in design, manufacture, application, marketing, distribution, packaging, instructions for the customer and sales forces, sales literature, advertising and promotion."

"When completed, this study becomes a manual which can be followed by every department to speed the product to market."

★ ★ ★

National distribution of Detroit Handy "Tac" Rags will be taken over on July 1, 1957, by the **Permacel Tape Corporation,** according to a joint announcement by George C. Riegger, president of Permacel, and Philip Cohen, president of **Detro Manufacturing & Sales Company.**

Detro Manufacturing & Sales Company, Culver City, California, was founded in 1934 by President Philip Cohen and his son, Arthur Cohen, and is one of the country's leading manufacturers of tack rags. Detroit Handy "Tac" Rags will be stocked in Permacel's warehouses in Los Angeles, Dallas, Chicago, New Brunswick, Atlanta, Seattle, San Francisco and Detroit.

★ ★ ★

Hooker Electrochemical Co., Niagara Falls, N. Y., has opened a new district sales office at 6 Penn Center Plaza, Philadelphia 3, Pa. Neil M. Barber is manager of Philadelphia district sales, while **John J. Wojnar** has been named manager of the new office. The office will serve Pennsylvania, southern New Jersey, the eastern part of West Virginia, and all states east of the Mississippi River and south of Kentucky.

The office will be headquarters for Chemical Sales Representatives Julian J. Boyce of Charlotte, N. C., Joseph J. Lenahan of Pittsburgh, Pa., and Charles H. Foster, Jr. The office will also be headquarters for Durez Plastics Division Representatives Robert W. Bainbridge, Michael G. Dubenitz and Alexander L. Blackwell.

★ ★ ★

One million pounds of isophthalic acid, a chemical raw material for the surface coatings industry, arrived recently in New York on board the S. S. Edward Luckenbach. This first waterborne shipment of isophthalic from **Oronite Chemical Company's** new plant at Richmond, California, marks the beginning of regular large-scale shipments to Oronite warehouses, providing faster delivery to manufacturers along the Atlantic Seaboard and in midwestern areas.

Isophthalic acid is said to have certain properties that allow the paint formulator to produce organic finishes with superior properties, such as improved hardness, flexibility and toughness.

★ ★ ★

Directors of **The Dow Chemical Company** and **The Dobeckmun Company** of Cleveland have approved a proposal for merger of the two companies.

The proposal is subject to ratification by Dobeckmun stockholders.

The action of the two boards was announced jointly by Leland I. Doan, Dow president, and Thomas F. Dolan, Dobeckmun president.

If the merger proposal is approved by Dobeckmun stockholders, Dobeckmun would continue to operate under its present officers and the firm would become known as The Dobeckmun Company, a division of The Dow Chemical Company.

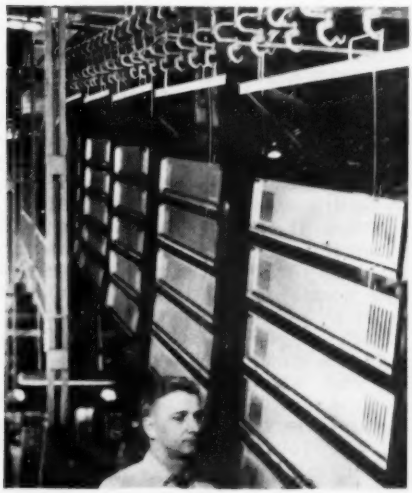
Steel lockers made by **Republic Steel Corporation** are now being given extra protection against rust by phosphatizing, a metal surface treatment that inhibits rust formation. This treatment is applied to all school, industrial and institutional lockers manfactured by Republic.

Completion of a new million and a half-dollar phosphatizing and painting unit at the Berger Division plant in Canton, Ohio, enables Republic Steel to employ a five-stage pretreatment for its complete locker assemblies.

"Phosphatizing our lockers," a company official explained, "gives them added corrosion resistance. The coating is a non-metallic phosphate, applied to locker parts prior to painting and assembly.

"In addition to inhibiting rust, the coating forms an extra anchor for the enamel. This helps to keep the paint from peeling or lifting, even under severe service conditions. It minimizes maintenance expenses."

Phosphatized lockers promise to be particularly useful, the manufacturer points out, in locker rooms where moisture is heavy. This is an especially serious problem in many schools and factories that have been equipped with gang showers. Condensation of steam vapors from the showers creates an almost uncontrollable moisture problem, which is successfully overcome by phosphatizing the lockers.



Locker doors travel on monorail hangers into the phosphatizing and painting line, part of a $1.5 million expansion program at Republic Steel's Berger Division in Canton, Ohio. All locker parts are treated with rust inhibitor before being painted in this five-stage phosphatizing unit.

★ ★ ★

Modern spray painting equipment has become part of the Illinois Institute of Technology's research apparatus used to explore the practical possibilities of using sprayable vinyl plastic as a building material for shelter construction.

The spray painting equipment, donated to IIT for student instruction, is a product of the **Binks Manufacturing Company**, Chicago. It consists of a dry, floor-type spray booth, an air compressor, paint tanks and three Model 18 spray guns with pole extensions.

In recent years the sprayable plastic has been used in architectural work as a vapor barrier. It coats a surface with an air- and waterproof plastic film. "We feel it has a significant potential as a shelter building material," Professor Richard E. Baringer, director of IIT's shelter department, a division of the school's Institute of Design, pointed out.

Results of IIT's extensive experimentation on the subject were presented to the public recently at the school's annual "Technorama" show held on campus in Chicago. Spray demonstrations produced completed shelters and other functional items made of the vinyl plastic.

The basic idea of plastic coating was developed in World War II, according to Professor Baringer. "We were familiar with it at that time as a material for 'mothballing' military equipment," he explained.

Already widely accepted in Canada,

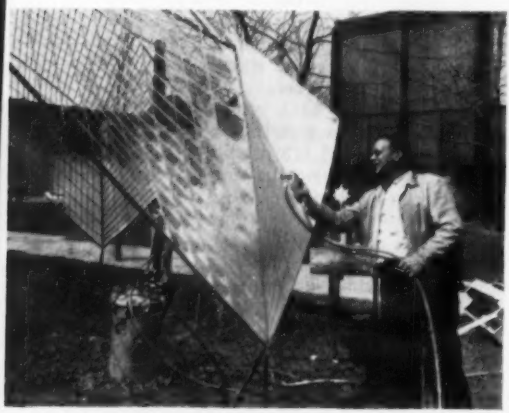
sprayable vinyl plastic is rapidly gaining favor with contractors in the United States. In this country, its major use to date has been in sealing cracks and breaks in the inside liners of railroad grain cars.

The material may be easily applied to either solid structures or frameworks by means of conventional spray painting equipment. The plastic's seamless, washable "skin" is resistant to high pressure and is impervious to water.

For purposes of the public demonstration, Professor Baringer utilized a popular brand of liquid plastic, which was sprayed over a tubular steel framework to form two modern "buildings."

As a prelude to the shelter demonstration, the sprayable plastic was tested for decorative uses by providing the base material for two ultra-streamlined chairs and a sculptured interior lighting fixture.

The light structure and chairs were sprayed in the 10-foot-square Binks spray booth, which is housed in the school's modern Institute of Design building. The shelter demonstration was carried out on the campus lawn.



A Binks Model 18 spray gun is being used to coat the top of one of IIT'S plastic "buildings" with the sprayable vinyl material now being tested at the school as a material for construction of shelters.

"Sprayable vinyl plastic used as a building material on a framework, rather than a solid material such as a pre-built wall, requires additional areas to build on," Professor Baringer explained. These may be provided by stripping in masking tape, or similar material between the framing members. The plastic film builds on these strips, much as a "super spider" might spin a web, or a huge moth its cocoon. However, even with taped additions to the framework, plastic film applied on a framework, rather than a solid surface, requires the formation of a base "cobwebbing" before the second and final coat is applied.

"The cobwebbing material is formed through the addition of a webbing agent to the original vinyl plastic material," the Professor related. This combination is mixed in Binks fluid pressure tanks used at IIT.

"The material may be applied by means of Binks standard spray equipment," the Professor stated. The nozzle orifice should be slightly larger than normal, but need be no larger than that used for various applications of heavy paint or other high-viscosity fluids. Fluid pressure in spraying the plastic is usually kept at about 12 pounds, and air pressure in the vicinity of 40 pounds. The spray gun is usually held about 15 inches from the framing or spray surface.

When the liquid plastic is emitted from the spray gun orifice, the external jets of air forced into it through the nozzle cause it to break up into a sticky mist-like substance. This material adheres to itself and eventually builds a sturdy wall of material.

"The whole operation is simple, fast, and we feel has definite merit for a variety of possible building uses in the future," Professor Baringer concluded.

★ ★ ★

The **Schauer Manufacturing Corp.**, Cincinnati, Ohio, recently celebrated its 50th anniversary.

Schauer attributes much of its

Executives of the Schauer Manufacturing Corp., J. K. Wilson, manager of industrial sales (left), and A. J. Kohn, president, are shown examining the latest small type of the Schauer Speed Lathe. The firm originated this type of lathe in 1929. Schauer recently celebrated its 50th anniversary.

growth to one of its major products, the Schauer Speed Lathe, introduced in 1929.

Today Schauer Speed Lathes are built in a size and style for almost any type of secondary finishing work.

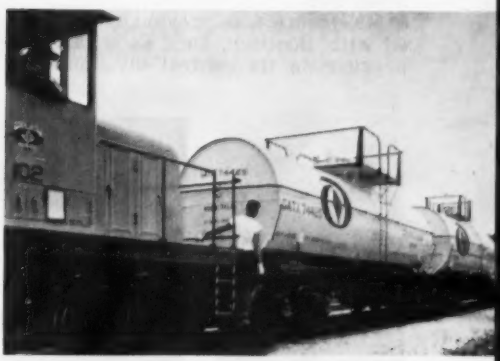
Originating in a small, one-room shop, the Schauer Corp. is now housed in a modern plant containing 33,000 square feet of office and manufacturing space, situated on 10 acres of ground.

In addition to those shown in the accompanying photograph, other Schauer executives include G. L. Nord, vice president, engineering, and S. E. Wright, vice president, sales.

★ ★ ★

Tank cars of **Diamond Alkali Company,** Cleveland, Ohio, are wearing an attractive new look these days. Formerly painted black, with red-and-black horizontal diamond-shape trademark and white lettering, Diamond tank cars henceforth will feature the company's newly developed trademark in bright red and black and the Diamond Chemicals logotype in large block style lettering in black on a gray background.

The cars, of from 4,000 to 10,000 gallons capacity each, are used for shipping a wide range of Diamond chemicals for industry and agriculture from 15 plant locations in 10



Tank cars illustrated above, among those now in service at Diamond Alkali's Deer Park, Texas and Muscle Shoals, Alabama plants, are the first in a fleet of nearly 1,000 scheduled to be refinished with new Diamond emblem, as shown, within the next two years.

states. They include caustic soda, chlorine, chlorinated solvents, chromium chemicals, muriatic acid, grain fumigants and sodium silicates.

NEW POSITIONS

R. T. Brown, sales manager of **Metal & Thermit Corporation's** Welding Division has announced the following personnel changes.

N. F. Kiernan assumes the post of regional manager for welding products in the West Central Region with headquarters at the company's sales office in East Chicago, Indiana.

J. DeSanto, who has served as acting regional manager at East Chicago for the past two years is undertaking additional field sales responsibilities in the Chicago area.

C. F. Delbridge succeeds Mr. Kiernan as regional manager in the northeastern area and will have offices at Rahway, N. J.

James J. Moore, Jr., has been named north central area sales representative for the **Pioneer Rubber Company's** Industrial Products Division. His representation will include the entire Pioneer line of industrial gloves: Stanzoil, Stanflex, Pacemaker and Sheergrip.

Mr. Moore was previously associated with Bostitch, Inc., as a sales supervisor in its central division.

James J. Moore, Jr.

Arnold Kurth

MacDermid Incorporated, Waterbury, Conn., has appointed **Arnold Kurth** sales trainee. Mr. Kurth will receive training in the company's Customer Service Laboratory, where metal finishing chemicals and compounds are tested under actual production conditions.

★ ★ ★

E. A. Zahn, 4304 Alton Rd., Louisville 7, Ky., is now a consultant on problems related to industrial finishing. For 28 years, Mr. Zahn worked on research, development and quality control in the finishing departments of a manufacturer of electrical equipment and appliances.

Mr. Zahn, who invented the Zahn viscosity cup, is the author of two finishing books: *Flow Coating* and *Scientific Paint Evaluation.* He has also written several articles about finishing materials, methods and practices.

E. McKendree Hayden has been appointed special assistant to William H. Baldwin, president of **The Stanley Chemical Company,** a subsidiary of The Stanley Works, East Berlin, Conn. Named to succeed Mr. Hayden as technical director of the company is **Robert F. McTague,** who has been assistant technical director.

In this new post, Mr. Hayden, who remains a vice president and director of the concern, will be responsible for the development of new products, especially in the fields related to plastics. He has been one of the pioneers in the development of plastisols and organisols. Many of the products now produced by The Stanley Chemical Company have been developed under his guidance. He has directed the technical program of the company for the past 20 years.

Mr. McTague joined the chemical company as a chemist in 1940 and became research director in 1946. He was named assistant technical director in 1956.

★ ★ ★

W. R. Nolf, for the past three years plant superintendent of the Nuclear Products Div., American Car & Foundry Co., Buffalo, has been appointed plant manager for the Dix Ave. plant of **Wagner Bros. Inc.**

In his new capacity, Mr. Nolf will be responsible for the operation of the company's Dix Ave. facilities, including all phases of manufacturing plating machines, rectifiers, and related metal plating equipment, under the direction of O. H. Tiedeman, plant general manager.

★ ★ ★

Pangborn Corporation, Hagerstown, Md., manufacturer of blast cleaning and dust control equipment, has announced the appointment of **Herbert J. Niemann** as sales engineer.

Mr. Niemann, formerly associated with the Hydro-Blast Corporation as vice president of sales and executive vice president, will specialize in the application of separate dust collectors in the Chicago area.

Ellsworth A. Stockbower has been appointed manager of New Product Sales in the Metalworking Chemicals Division of the **American Chemical Paint Company,** Ambler, Pa.

Mr. Stockbower joined the ACP research laboratory staff in 1947. In 1951, he was made metalworking chemicals technical service manager. He was made manager of the Technical Standards Department in 1953.

Werner Donbeck

E. A. Stockbower

Werner Donbeck has joined **Better Finishes & Coatings, Inc.,** Newark, N. J., as northern New Jersey representative for that company's line of industrial finishes, architectural and maintenance paints and strippable coatings. Prior to joining Better Finishes' Sales Department, Mr. Donbeck spent six years as a laboratory technician with the company.

★ ★ ★

Paul L. Lantz of Princeton, Mass., has been appointed production manager of the Abrasive Division of **Norton Company.** He succeeds the late George A. Fyrberg, who died April 6.

Mr. Lantz has been assistant manager of the Industrial Engineering Department since the Fall of 1956. He began his Norton career in 1935.

★ ★ ★

Heatbath Corporation has announced the appointment of **Bernard C. Lindstrom** as technical sales representative in New York State, exclusive of the Metropolitan New York City area.

★ ★ ★

Bob Allan, chemist at **Lea-Michigan, Inc.,** Detroit, Michigan, has been placed in charge of production and the laboratory.

Bob Allan

Bernard S. Reckseit

Bernard S. Reckseit has been named vice-president in charge of engineering by **Ransohoff, Inc.,** Hamilton, Ohio, manufacturer of metal cleaning and finishing equipment and systems.

Mr. Reckseit joined Ransohoff in 1947 as engineering asistant to the president. Following the death of Nathan Ransohoff, founder, chairman of the board and chief engineer, Mr. Reckseit was appointed chief engineer in November, 1956.

★ ★ ★

Allied Research Products, Inc., Baltimore, manufacturer of chromate conversion coatings and plating chemicals, has announced the addition of two new representatives to its sales organization.

Robert S. Sweeney will cover central Michigan and northwestern Ohio from headquarters at the Detroit district sales office.

Chester J. Bogin will cover northern Chicago as well as the northern

Illinois counties including Rockford. Mr. Bogin will make his headquarters at the Chicago District Office.

★ ★ ★

Ranald G. Dunning has joined **Metalwash Machinery Corporation** of Elizabeth, N. J., as manager of research and development.

Mr. Dunning, formerly project engineer and project analyst at Merck & Co., has installed a new research and development laboratory at Metalwash, where he will supervise Research and Development Projects for the company's four divisions.

In addition, Metalwash announced that it has expanded research facilities to offer more research and technical service to its customers. The Technical Service, available to customers in all divisions, provides laboratory solutions to all types of soil removal problems.

Edward F. Busby

Ranald G. Dunning

Edward F. Busby has been appointed sales representative for **Frederic B. Stevens, Inc.,** Metal Finishing Division.

Prior to joining Stevens, Mr. Busby was a sales representative specializing in cleaners, burnishing materials and paint strippers. He is a past president of the New Haven Branch of the American Electroplaters' Society and is presently on the Board of Managers of the branch.

Frederick Gumm Chemical Co., Inc., Kearny, N. J., has announced the appointment of **Charles B. Clark** to represent the company in the western New York territory.

Albert G. Fusco has been appointed to represent Gumm in the southern New Jersey territory; he will continue to represent Gumm in New York City.

★ ★ ★

Metal & Thermit Corporation, New York, has announced several personnel changes.

D. W. Oakley, previously technical advisor to the president, has been made production manager. Mr. Oakley has been with Metal & Thermit since 1947 and from 1952 to 1956 was manager of its Carteret, N. J., plant.

H. A. Rack, who was production manager, has been appointed manager of engineering. Mr. Rack has been with the company in various engineering and managerial capacities since 1944.

C. H. Carpenter, Jr., has been appointed technical advisor to the president. Mr. Carpenter joined Metal & Thermit in 1955 as assistant manager of market development.

K. E. Doud has been made assistant manager of engineering.

R. E. Davis has been transferred from the company's central engineering department to its market development division.

★ ★ ★

Ralph A. Petersen has been appointed manager of the new Birmingham, Alabama, district office of **Pangborn Corporation,** Hagerstown, Md., manufacturer of Rotoblast and dust control equipment.

Mr. Petersen recently joined the Pangborn Corporation as a sales engineer. He was assigned to the home office in Hagerstown, Md. He now has charge of the states of Alabama and Mississippi and eastern Tennessee.

The new district office is at 1731-C Valley Ave.

Ralph A. Petersen

Robert T. Kubinak

George Konkol

Jack D. Lodge

Robert T. Kubinak has been named a sales representative for **The Stanley Chemical Company,** a subsidiary of The Stanley Works, East Berlin, Conn. Mr. Kubinak will represent the company in its central Pennsylvania territory.

★ ★ ★

Leon A. Warner, president of **The Baird Machine Company,** of Stratford, Connecticut, has announced the election of **Durwood A. Blaisdell** as executive vice-president of the company. Mr. Blaisdell will immediately assume general management responsibility for all Baird operations, which include the manufacture of chuckers, multiple transfer presses, vertical lathes, four-slide machines, barrel finishing machines and Beaver Riding Tractors.

★ ★ ★

George Konkol has been appointed to the newly created position of manufacturing manager in charge of wire, weld, and metal stamping operations for **Sylvania Electric Products Inc.**

Mr. Konkol will be responsible for manufacturing operations at Sylvania's weld plants in Warren, Pa., and Nelsonville, Ohio, metal stampings plant in York, Pa., and wire plant in Warren.

Edward J. Bullard has been elected chairman of the board of directors, **Bullard Clark Company.** Mr. Bullard was president and treasurer of the firm at the time of his election.

Jack D. Lodge succeeds Mr. Bullard as president of the 90-year-old maker of cotton buffing wheels and extruded and molded rubber goods. Mr. Lodge formerly was vice president and secretary of the corporation, as well as general manager of the **Williamsville Buff Division.**

Other executive shifts include the promotion of **J. Edgar Moe,** general manager of Jacobs Rubber Division and former vice president, to the post of executive vice president and secretary of The Bullard Clark Company. The post of executive vice president was recently made vacant by the resignation of **B. T. Clark** who has retired after twenty-five years' service because of ill health. In addition to continuing as sales manager for the company's textile divisions, Vice President **William R. Muller** was named division manager of the E. H. Jacobs Northern Division.

★ ★ ★

Jess E. Bunch and **Richard A. Noblett** have been appointed manager and and assistant manager, respectively, of the Plating Equipment Division,

Richard A. Noblett

Jess E. Bunch

R. I. Wilson, Jr.

David H. Tuel

Automotive Rubber Co., Inc., Detroit.

Mr. Bunch comes to ARco after 26 years as superintendent of the Plating Division, Cadillac Motor Car Co.

As manager, Mr. Bunch will be in charge of the fabrication, manufacture, engineering and development of anodizing and plating equipment, including rubber-covered anodizing and plating racks and their components and fabricated and/or rubber-lined tanks and systems.

Mr. Noblett formerly served as project engineer with Hudson Motor Car Company on the Boeing B-47 and R-47 aircraft development.

★ ★ ★

E. R. Van Cleef, president of the **Olo Paint Corporation,** has announced the election of the following men as officers of the company: **Lloyd E. Flanders, Jr.,** vice president and general sales manager; and **William Tome,** vice president and general plant manager.

★ ★ ★

Richard I. Wilson, Jr., has been appointed an industrial sales representative for the **Lowe Brothers Company,** according to E. F. Teyber, industrial sales manager. Mr. Wilson will represent the company in the Philadelphia area.

David H. Tuel has been appointed sales representative for **Wyandotte Chemicals Corporation** in the Pacific Northwest. Mr. Tuel will headquarter in the Wyandotte Chemicals Seattle district sales office, 659 Skinner Building, Seattle 1, Washington.

★ ★ ★

Oakite Products, Inc., manufacturer of metal cleaning and treating materials, has announced the reassignment of two technical service representatives.

J. Edouard Sauve, who has represented Oakite in Marion, Ohio, for the past five years, joins the Detroit staff and will serve the metal industries in the northeastern metropolitan area.

Peter J. Texier, Jr., since 1952 a member of the technical staff of Oakite's service laboratory, has been assigned to serve the metal industries in south Buffalo, New York.

★ ★ ★

The appointment of **Charles B. Kish** as chief engineer, Rectifier Division, **Sel-Rex Corporation,** Nutley, New Jersey, has been announced by John Mazza, manager of manufacturing.

In his new position, Mr. Kish will be responsible for much of the intricate circuitry design necessitated by the large power conversion units Sel-Rex has contracted to build for several electrochemical manufacturers.

Charles B. Kish

Sid Mitwol

W. C. Van Keuren

Robert W. Haberl

Sid Mitwol has been promoted to manager of the Detroit office of **Sel-Rex Corporation,** Nutley, New Jersey.

Mr. Mitwol was product sales manager for the firm's Rectifier Division prior to his current assignment. His new headquarters will be Sel-Rex's Detroit office, 18040 James Couzens Highway.

★ ★ ★

R. E. Perry, general sales manager of the **Diversey Corporation,** has announced the appointment of four new district managers in the firm's Central Division.

They are **Sidney E. Cadieu,** Dunbar, Wisc.; **Kenneth O. Green,** Monmouth, Ill.; **James P. Raleigh,** Overland (St. Louis), Mo.; and **Walter C. Rohn,** Wilmette, Ill.

★ ★ ★

Ford Ballantyne, Jr., a **Wyandotte Chemicals** vice president and general manager of The J. B. Ford Division, has recently made the following appointments:

W. C. Van Keuren became manager of New York District office. Mr. Van Keuren joined Wyandotte Chemicals' Boston District sales staff in 1945 and became manager of Wyandotte's Philadelphia office in 1952.

John K. Stanz, for the past five years a member of the Philadelphia District office sales staff, succeeds Mr. Van Keuren as district sales manager.

Robert W. Haberl became sales manager of Wyandotte's Kansas City District. Mr. Haberl has been acting manager since the death of Gail Eldridge.

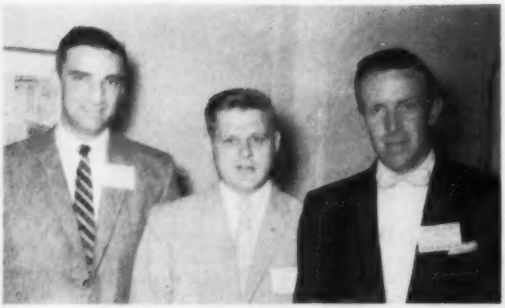
A. J. Bettelheim

John K. Stanz

A. J. Bettelheim, Wyandotte's New York District sales manager for 17 years, was granted early retirement. Mr. Bettelheim was recently the guest of honor at a luncheon attended by the entire Wyandotte Chemicals J. B. Ford Division home office staff.

SOCIETIES

On June 16 a charter was granted by the **American Electroplaters' Society** to the **Mohawk Valley Branch,** the newest branch in the society. Officers of the new branch are: **Frank A. Czech,** president; **Charles Bridgett,** 1st vice president; **Jack Bension,** 2nd vice president; **Charles Raehm,** secretary-treasurer; and **George Simmons,** librarian. The Board of Managers is



Officers of the Mohawk Valley Branch in attendance at the 44th Annual A. E. S. Convention at Montreal. Shown (left to right) are Jack Benson, General Electric Company; Frank A. Czech, General Electric Company; Charles P. Raehm, General Electric Company. (Photograph by PRODUCTS FINISHING)

composed of **Merwin Warren, Charles Higgerson, Robert Stewart, James Lewis,** and **Walter Sackett.**

TRAINING COURSES

Plant engineers across the nation are now learning the techniques for fabricating and installing rigid vinyl pipe and sheeting in a "school" brought into their plant classrooms.

The school consists of a demonstration unit which the plastic division of **B. F. Goodrich Industrial Products Company,** Marietta, Ohio, is sending on 15-month nationwide tour.

Purpose of the tour is to explain the properties of rigid Koroseal, manufactured by B. F. Goodrich Industrial Products Company, and to show how it is being adapted and installed in industry.

Heading the demonstration unit is **James P. Regan,** who travels from city to city in a special panel truck that carries a complete demonstration display.

Mr. Regan, in conducting classes in the plants, emphasizes practical demonstrations that show the simplicity of working with Koroseal rigid vinyl pipe and sheeting.

Pipes, valves, fittings and sheet made of Koroseal are used on original equipment and as replacement for metal pipe in thousands of industrial applications.

★ ★ ★

Twenty-two junior and senior students from Fenton High School, in Bensenville, Ill., recently attended a special one-day course in spray paint-

James P. Regan, at right, demonstrates to engineers at Richmond Tire & Rubber Company, Richmond, Virginia, techniques for welding rigid Koroseal material with a hot-air gun.

ing at the **Binks Spray Painting School.**

This class was held in the equipment manufacturer's Chicago head-

William Brooks, chief instructor of the Binks Manufacturing Company's Spray Painting School, explains mechanical features of Binks Model 18 Spray Gun to a group of high school students who recently attended a one-day training session at the school.

quarters, as are the regularly scheduled sessions. Since 1949, Binks has offered free five-day courses in spray painting every month except July and August. The courses are open to persons interested in spray painting and spray painting equipment.

HONORS

Edgar W. Fasig, vice-president of manufacturing, **Lowe Brothers Company,** was one of twelve national industrial leaders given awards of merit by the American Society for Testing Materials at its 60th annual meeting in Atlantic City on June 19.

The ASTM is a research and standards group composed of 14,000 members, with headquarters in Philadelphia. Mr. Fasig was cited for "recognition of constructive contributions over many years to ASTM research and standards work, especially as a long-time officer of Committee D-1 on Paint, Varnish and Lacquer, and for "administrative support."

Mr. Fasig has been with Lowe Brothers since 1917. He became assistant general superintendent in 1920, general superintendent and technical director in 1926, and was named to his present position last November.

Edgar W. Fasig

Mr. Fasig is also a recipient of the 1955 George B. Heckel award, highest individual award in the paint industry. He was honored as a result of his "extraordinary contributions to the industry in technology and production."

NECROLOGY

Walter C. Kerrigan, assistant to the president of The International Nickel Company of Canada, Limited, and its United States subsidiary, **The International Nickel Company, Inc.,** died July 16 at the Middlesex General Hospital, New Brunswick, N. J., after an illness of several months.

MEETINGS of INTEREST to FINISHERS

Oct. 6-10. Fall Meeting, Electrochemical Society, Statler Hotel, Buffalo, N. Y.

Oct. 30-Nov. 2. 22nd Paint Industries' Show and 35th Annual Meeting, Federation of Paint and Varnish Production Clubs, Bellevue-Stratford Hotel, Philadelphia, Pa.

Nov. 2. Annual Educational Session and Banquet, Philadelphia Branch, A.E.S., Penn-Sheraton Hotel, Philadelphia, Pa.

Feb. 14-15. Third Annual Technical Session and Banquet, Southeastern Branch, A. E. S., Dinkler Plaza Hotel, Atlanta, Ga.

May 19-22, 1958. 45th Annual Convention, A. E. S., Hotel Sheraton-Gibson, Cincinnati, Ohio.

For Free Literature Circle Numbers on Card Inside Front Cover

PRODUCT LITERATURE

46. Ultrasonic Transducers
Bulletin S-502 gives specifications for B Series Transducers. Branson Ultrasonic Corp., 26 Brown House Rd., Stamford, Conn.

47. Conveyor Coupling
"To Make Ends Meet, Drop It in the Slot" is the title of a descriptive folder on "Quick-Eez" Coupling for portable conveyors. E. W. Buschman Co., 4516 Clifton Ave., Cincinnati 32, Ohio.

48. Industrial Humidification Guide
Form No. A 1413 answers such questions as "who needs humidity?"; "why do they need humidity?"; "what relative humidity do they need?"; and others pertaining to humidity and humidification equipment. Research Products Corporation, Dept. 76, Madison 10, Wis.

49. Work Clothes
Folder describes advantages, chemical resistance of various types of industrial work clothes. Chem-Wear, Inc., P. O. Box 1044, Darien, Conn.

50. Vacuum Metalizing Equipment
General catalog of high-vacuum equipment for laboratory and industrial applications. Contains helpful basic information on the equipment and techniques used in high-vacuum processing. Has special section devoted to the vacuum metalizing process. Rochester Div., Consolidated Electrodynamics Corp., 1775 Mt. Read Blvd., Rochester 3, N. Y.

51. Rubberized Abrasives
Catalog No. 53. General description and illustrations of different types of rubberized abrasives. List of general uses. Description of grit types. Operating suggestions and recommendations. Cratex Manufacturing Co., 81 Natoma St., San Francisco 5, Calif.

52. Grinding and Polishing Machines
Brief descriptions of a number of Curtis "600" Series abrasive-belt grinding and polishing machines, their uses and advantages. Curtis Machine Div., The Carborundum Co., Jamestown, N. Y.

53. Portable Spray Booths
Folder describes various portable spray booths that include an integral exhaust system. Cord from exhaust fan on these booths can be plugged into any 110-volt a.c. outlet. Uses throw-away filters. Detroit Fabricating Corp., 7521 St. Aubin, Detroit, Mich.

54. Catalyst Spray Equipment
Folder contains schematic drawing, complete description of a system for spraying catalyst and additive materials. The DeVilbiss Co., Dept. 318, Toledo 1, Ohio.

55. Chemical-Resistant Sheet
"Saraloy 898, Chemical-Resistant Sheet" is the title of 18-page booklet that gives detailed information on this thermoplastic, chemical-resistant lining for storage tanks, processing tanks, pipes and fittings, fume ducts and hoods. Includes application data. Plastic Sales Dept., Dow Chemical Co., Midland, Mich.

56. Engineered Spray Washing
Data sheet describes service available to users of spray washing equipment. Includes survey and recommendation of compound, installation, continuous inspection and service. DuBois Co., Inc., 1120 W. Front St., Cincinnati 3, Ohio.

57. Graphite Processing Equipment
A 32-page report designed to help with cost estimation and selecting impervious graphite processing equipment. Includes heat exchangers, centrifugal pumps, pipes and fittings, other components. Falls Industries, Inc., Aurora Rd., Solon, Ohio.

58. Paint Flaw Detectors
Description of the K-D Bird Dog Paint-Flaw Detector, an electrical instrument that clicks slowly on good coatings, speeds up slightly at mild defects and howls loudly at bad defects. Gardner Laboratory, Inc., P. O. Box 5728 PF, Bethesda 14, Md.

59. Roller Coating
Folder contains case-history study of a roller coating installation being used to paint aluminum strip used in making awnings. Gasway Corp., 6463 N. Ravenswood Ave., Chicago 26, Ill.

60. Water-Cooled Germanium Rectifiers
Bulletin GEA 6375 describes water-cooled germanium rectifiers. Includes special section on rectifiers for use in electroplating and anodizing. General Electric Co., Section 463-15E, Schenectady, N. Y.

61. Metal-Finishing Products and Processes
Folder describes various chemicals for use in cleaning and finishing. Includes data on products and processes for electrodeburring, bronze plating, bright-nickel plating, immersion-tin coating, copper-plating chemicals, bright zinc, bright cadmium, chromium-plating additives, Globrite Metal cleaners, phosphate-coating products, metal strippers. Globe Chemical Co., Inc., Murray Rd. & Big Four R.R., Cincinnati, Ohio.

62. Tough Finish
Literature describes Kadmoid, a coating that is useful where extreme toughness and corrosion resistance is needed. Universal Paint & Varnish Co., Box 199, Bedford, Ohio.

63. Irradiant Grid Oven
Bulletin describes and illustrates the advantages of the Granco Irradiant Grid, a flameless-type incandescent gas burner that uses a special-alloy plenum chamber to develop radiation from a ceramic grid. Granco, Inc., 317 Thirty Second St., S.W., Grand Rapids, Mich.

64. Cleaning Products
Comprehensive 48-page catalog describes many Clepo Formulations for cleaning, stripping, deburring, etching and other processes. More than 80 products are detailed. Frederick Gumm Chemical Co., 538 Forest St., Kearny, N. J.

65. Germanium Rectifiers
Bulletin GR-100 on H-VW-M Germanium plating rectifiers. Describes improved voltage regulation features, control, efficiency of these units. Hanson-Van Winkle-Munning Co., Church St., Matawan, N. J.

66. Nickel Processes
Bulletin lists advantageous features of Harshaw Perglow and Perflow bright-nickel processes. Discusses brightness, ductility, corrosion resistance, leveling characteristics, ease of operation and control, ease of chromium plating, tolerance to impurities. Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio.

67. Fume Ventilation
The importance and use of corrosive fume-ventilation equipment is discussed in a 10-page report. Heil Process Equipment Corp., Dept. PF, 12901 Elmwood Ave., Cleveland 11, Ohio.

68. Filtration Equipment, Methods
Bulletin EP-100, entitled "Modern Filtration for the Plating Industry." This 16-page manual shows latest equipment and methods for filtering plating solutions. Includes diagrams and information on waste recovery or destruction systems. Industrial Filter & Pump Mfg. Co., 5904 Ogden Ave., Chicago 50, Ill.

69. Brass Additive
Literature on Jelco Brass Additive, a brass brightener for standard brass solutions. Jelco Finishing Equipment Corp., 153 E. 26th St., New York 10, N. Y.

70. Thickness Tester
Bulletin 400 describes new model 955 electronic thickness tester and accessories. Kocour Co., 4814 S. St. Louis Ave., Chicago 32, Ill.

71. Barrel Finishing Laboratory Brochure
A six-page brochure conducts the reader on a guided pictorial tour of what is said to be the world's largest barrel-finishing laboratory. Lord Chemical Co., 2068 S. Queen St., York, Pa.

72. Spray Guns
A folder shows cutaway view, points out important features of M & E S-70 Micro-Spray Gun. M & E Manufacturing Co., Dept. G-312, 2571 Winthrop Ave., Indianapolis 7, Indiana.

73. Metal Stripper
A liquid acid metal stripper is described in Technical Data Sheet No. 46, a two-page usage and instruction sheet prepared by MacDermid, Inc., Waterbury, Conn. Called Metex Metal Stripper SS, this material is an immersion strip requiring no current. It strips all commercially plated coatings except chromium and certain precious metals from stainless steel or aluminum. MacDermid, Inc., Waterbury 20, Conn.

74. Aluminum Cleaner
A 12-page booklet describes various Permag compounds used in cleaning aluminum and its alloys. Includes data on cleaning operations, frosting, stripping anodic coatings, paint stripping, and cleaning aluminum before anodizing. Magnuson Products Corporation, 50 Court St., Brooklyn 2, N. Y.

75. Deburring Machine
Technical information on the Mechamatic deburring Machine, which rotates the workpiece in a moving abrasive slurry to accomplish automatic deburring and finishing. Mecha-Finish Corp., P. O. Box 308, Sturgis, Mich.

76. Contour Sander
Details regarding the Sand-O-Flex Contour Sander. The Sand-O-Flex feeds fresh abrasive as needed, by turning an indexing knob. Merit Products, Inc., 4023 Irving Place, Culver City, Calif.

77. Surface Roughness Measurement
Bulletin entitled "How to Win Arguments on Surface Roughness" tells how the Profilometer can measure surface roughness scientifically. Micrometrical Mfg. Co., 315 S. Main St., Ann Arbor, Mich.

78. Solvent Cleaner
A 12-page booklet describes Immunol, a non-alkaline, non-acid detergent and rust preventive that cleans, degreases and rustproofs metal in one operation. Harry Miller Corp., 4th & Bristol Sts., Philadelphia 40, Pa.

For Free Literature Circle Numbers on Card Inside Front Cover

For Free Literature Circle Numbers on Card Inside Front Cover

79. Paint Rejuvenator
Data sheet describes various sizes and types of apparatus for shaking containers of paint so as to mix the contents without removing the lids. Miracle Paint Rejuvenator Co., 127 E. 9th St., St. Paul 1, Minn.

80. Alkaline Deruster
Description of Alkaline Deruster No. 2, a non-electrolytic compound for removing rust quickly from metals. Mitchell-Bradford Chemical Co., Wampus Lane, Milford, Conn.

81. Drum Rotator
Bulletin No. 155 gives facts on Model 200 Variable-Speed Drum Rotator. Morse Manufacturing Co., Inc., 762 W. Manlius St., East Syracuse, N. Y.

82. Spray Booth Water Additive
Literature on Mogul M-35, an additive for the water used in water-wash spray booths. North American Mogul Products Co., Standard Bldg., Cleveland 13, Ohio.

83. High-Vacuum Equipment
A 16-page product index covers over 400 items of industrial and laboratory high-vacuum equipment, including standard components, packaged systems, and engineered plants. NRC Equipment Co., a subsidiary of National Research Corp., Dept. 23H, 160 Charlemont St., Newton Highlands 71, Mass.

84. Viscosity Control
Bulletin No. V-1212 describes the Norcross Viscosity Control System for adding solvent. Norcross Corp., 247 Newtonville Ave., Newton 58, Mass.

85. Removing Exhaust Fumes
Removal of carbon monoxide and other air contaminants from exhausts of LP-gas-powered trucks by catalytic purifiers is described in a paper, "Sweetening the Ford Truck's Breath," reprinted by Oxy-Catalyst, Inc., Industrial Div., Wayne, 13, Pa.

86. Soak-Tank Rust Remover
Literature on End-O-Rust, a chemical rust remover formulated for use in soak tanks. The Peters Co., Div. of Toledo Paint & Chemical Co., Toledo 1, Ohio.

87. Plastic Coating Process
Folder gives technical information on the Whirlclad Process for coating metals in a finely divided bed of fluidized powders. Polymer Processes, Inc., 2120 Fairmont Ave., Reading, Pa.

88. Germanium Rectifiers
Bulletin GL-1 lists advantageous features of the Rapid "Golden Line" of Germanium rectifiers. Rapid Electric Co., 2877 Middletown Rd., Bronx 61, N. Y.

89. Paint Remover
Bulletin No. 9 gives technical data on LPO Paint Remover, a non-flammable remover formulated to remove Epon and other difficult-to-remove paints. RPO Chemical Corporation, 2727 E. Nine Mile Rd., Hazel Park, Mich.

90. Checking Color Anodizing
"Setting Up a Simple Laboratory Procedure for Control of Color Anodizing" is the title of a 10-page booklet. Aluminum Dept., Sandoz, Inc., 61 Van Dam St., New York 13, N. Y.

91. Temperature Control
Bulletin No. 650B describes temperature controls for degreasers and metal cleaners. Sarco Co., Inc., Empire State Bldg., New York 1, N. Y.

92. Dust and Fume Eliminators
Bulletin VRU-4-57 gives specifications, lists advantages and applications for various sizes and types of Centri-Merge Vertical-Rotor Type Dust and Fume Eliminators. Schmieg Industries, Inc., 23930 Sherwood, Center Line, Mich.

93. Compressively Stressed Nickel
A 10-page technical paper describes Lectro-Nic Compressively Stressed Nickel Plating Process, developed specifically as an undercoat for rhodium, to combat the latter's high-stress characteristics. Sel-Rex Corp., Nutley 10, N. J.

94. Automatic Spray Mask Painting Machine
Data sheet tells about Model 5M Series of automatic Spray Mask Painting Machines. Sepanski & Associates, 902 Clancy Ave., Grand Rapids, Mich.

95. Barrel Finishing Equipment
Folder on the Mity-Mite Series of barrel finishing machinery. Includes specifications, photographs. Speed-D-Burr Corp., 3613-e San Fernando Rd., Glendale 4, Calif.

96. Cadmium Brightener
Data sheet tells how to obtain good protection from corrosion with an improved cadmium brightener that is said to plate parts faster and brighter. Smoothex, Inc., 10705 Briggs Rd., Cleveland 11, Ohio.

97. Organic Coatings
Folder describes a line of vinyls, lacquers and synthetics, tells how each is used. Stanley Chemical Co., Dept. H, 1468 Berlin St., East Berlin, Conn.

98. Belt-Driven Plating Barrels
Folder describes, illustrates, shows design features of Stutz Complete-Cycle, Belt-Driven Plating Cylinders. The Stutz Co., 4410 W. Carroll Ave., Chicago 24, Ill.

99. Black Oxide Finishes
Folder describes line of black oxide finishes, chromate coatings, cleaners, oils and strippers. Heatbath Corp., Springfield 1, Mass.

100. Alkaline Cleaners
Technical bulletin describes several alkaline cleaning compounds, tells how each can best be used. Swift Industrial Chemical Co., Canton, Conn.

101. Vacuum Metalizing Coils
A 12-page booklet describes in text, photographs and charts, Sylvania coils and heaters. Tungsten & Chemical Div., Sylvania Electric Products, Inc., Towanda, Pa.

102. Acid Pumps
Literature on pneumatic acid pumps, for use in the safe handling of acids and other liquids contained in carboys and barrels. Thompson Manufacturing Co., Inc., 152 W. 12th St., Erie, Pa.

103. Cable Conveyors
Engineering manual contains all the information needed to order and install a Tipp cable conveyor system. Includes diagrammatic plan for layout and dimensional calculations. Tipp Manufacturing Co., Tipp City, Ohio.

104. Steam-Cleaning Apparatus
Complete information, photographs: the Turco Steamerette. This simple apparatus uses plant steam. Turco Products, Inc., 6135 S. Central Ave., Los Angeles 1, Calif.

105. Bright Nickel Processes
Complete data on high-chloride bright nickel plating processes. The Udylite Corp., Detroit 11, Mich.

106. Vapor Blast
Before and after photographs show the job that Vapor Blast Liquid Honing can do in cleaning, removing scale, finishing, etc. Vapor Blast Mfg. Co., 3105 W. Atkinson Ave., Milwaukee 16, Wisconsin.

107. Container Tumbling Machinery
Literature shows complete line of container tumbling and rolling machinery for contents mixing. The Vol-U-Meter Co., P. O. Box 54, Buffalo 16, N. Y.

108. Chlorinator
Technical information on the Wallace & Tiernan Series A-711 V-Notch Chlorinator. Wallace & Tiernan, Inc., 25 Main St., Belleville 9, N. J.

109. Industrial Ovens
Bulletin 157 is a 16-page booklet describing a complete line of industrial ovens for baking, drying, curing and heat treating. Young Brothers Co., Dept. B-49, 1831 Columbus Rd., Cleveland 13, Ohio.

110. Polishing Machines
Catalog 72-FB describes and illustrates V-belt and direct-drive buffing and polishing lathes. The Hisey-Wolf Machine Co., Cincinnati 8, Ohio.

111. Automatic Polishing
Catalog of automatic buffing and polishing machinery. Acme Manufacturing Co., 1400 E. Nine Mile Rd., Detroit 20, Mich.

112. Chromate Coatings
Literature on chromate conversion coatings for protective and decorative applications on non-ferrous metals. Allied Research Products, Inc., 4004-06 E. Monument St., Baltimore 5, Md.

113. Electrocleaners
Data on a complete line of electrocleaners. Wyandotte Chemicals Corp., Wyandotte, Mich.

114. Automatic Tumbling Barrel
Description of the Ransohoff Automatic-Media-Return Tumbling Barrel, which performs all operations, including cleaning, deburring, descaling and media separating within the drum, without manual handling, on an automatic time cycle. Ransohoff, Inc., 610 N. Fifth St., Hamilton, Ohio.

115. Electrostatic Spray Painting
No. 2 Process Brochure cites many on-the-job examples of electrostatic spray painting on a wide variety of products. Ransburg Electro-Coating Corp., Indianapolis 7, Ind.

116. Why Hot Spray?
Booklet includes detailed case-history facts and figures on hot spray benefits. Spee-Flo Manufacturing Corp., Dept. PF, 720 Polk Ave., Houston, Texas.

117. Chlorinated Solvents
Literature on various types of chlorinated solvents for cleaning, degreasing, paint stripping, etc. Dow Chemical Co., Midland, Mich.

118. Stripping Zinc Chromate Primers
Booklet entitled "How to Strip Paint" tells how to strip zinc chromate primers, organic finishes, etc. Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

119. Automatic Barrel Plating Machine
Bulletin entitled "The Modern Concept . . . Stevens Automatic Barrel Processing and Plating Machine." Frederic B. Stevens, Inc., 1800 Eighteenth St., Detroit 16, Mich.

120. Contact Wheels
Description of a complete line of contact wheels. Chicago Rubber Co., Inc., 651 Market St., Waukegan, Ill.

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121. Crack-Free Chromium
Information on the advantages of using Crack-Free Chromium to improve heat, wear, and corrosion resistance are given in Bulletin CFC-2. Metal & Thermit Corp., Rahway, N. J.

122. Low-Foaming Cleaner
Data on a recently developed low-foaming alkaline cleaner for use in spray washers. Pennsalt Chemicals Corp., Dept. 515, 3 Penn Center Plaza, Philadelphia 2, Pa.

123. Satin-Finishing Compounds
Data on Lea Satin-Finish Compounds. Lea Manufacturing Co., 16 Cherry Ave., Waterbury 20, Conn.

124. Finger Buffs
Catalog shows various types and sizes of Churchill Finger Buffs. Geo. R. Churchill Co., Inc., Dept. PF, Hingham, Mass.

125. Phosphate Coatings
Bulletin 1380 describes various types of ACP Granodine, gives information which will help to select the proper one for a specific application. American Chemical Paint Co., Ambler 14, Pa.

126. Finishing Conveyors
Bulletin LS-1 on Landahl Chainless Conveyors. Landahl Conveyor Co., 13142 Athens Ave., Cleveland 7, Ohio.

127. Copper Plating Solution
Bulletin 70.2 contains technical information on the Wagner Iso-Brite Copper Process, which is said to offer ease of control; high anode efficiency; bright, ductile, dense deposits; a wide operating range; and high tolerance to organic contamination. Wagner Bros., Inc., 400 Midland Ave., Detroit 3, Mich.

128. Abrasive Belts
Booklet entitled "Case History Reports on 3M Abrasive Belts." Minnesota Mining & Mfg. Co., St. Paul 6, Minn.

129. Electroformed Masks
Literature on electroformed spray painting masks that are made by a patented process. Conforming Matrix Corp., 356 Toledo Factories Bldg., Toledo 2, Ohio.

130. Pumps
Catalog of industrial pumps and equipment discusses advantages of the Balcrank Jet-Power Paint Pump. Balcrank, Inc., 41 Disney St., Cincinnati 9, Ohio.

131. Airless Spray Painting
Information on the Bede Airless Spray Painting Process and equipment for performing airless spray painting. Bede Products Corp., Jackson St., Dept. 1, Amherst, Ohio.

132. Radiant Heating
Booklet entitled "Applications Unlimited" contains helpful information on radiant heating. Fostoria Pressed Steel Corp., Dept. 622, Fostoria, Ohio.

133. Protect Brass and Copper
Complete information on Nikolas water-dip lacquers. Used after the final rinse following a copper, brass or silver-plating cycle, these lacquers remove all water and deposit a thin film that will resist fingerprinting, tarnishing and mild scratching. G. J. Nikolas & Co., Inc., 2880 Washington Blvd., Bellwood, Ill.

134. Barrel Finishing Book
A 52-page book of information on barrel finishing. Includes detailed cost chart on finishing typical parts. Almco Div., Queen Stove Works, Inc., 88 Marshall St., Albert Lea, Minn.

135. Abrasive Belts
Catalog lists and describes Red Coat brand abrasive belts. Michigan Abrasive Co., 11911 E. Eight Mile Rd., Detroit 5, Mich.

136. Truck-Type Oven
Bulletin No. 126 describes truck-type baking oven, a heavy-duty oven capable of processing large quantities of work at temperatures up to 500 deg. F. W. S. Rockwell Co., 2907 Eliot St., Fairfield, Conn.

137. Ovens
"Ovens for Industry" catalog describes complete line of industrial ovens. Kirk & Blum Mfg. Co., 3116 Forrer St., Cincinnati 9, Ohio.

138. Phosphate Coatings
Information on a complete line of phosphate coatings, including zinc-iron phosphates, iron phosphates and phosphates for cold extruding. Detrex Chemical Industries, Inc., Box 501-C, Detroit 32, Mich.

139. Stripping Metals
"Enstrips" booklet tells how to dissolve one metal from another, chemically, without disturbing the base metal. For nickel, copper, chromium, zinc, cadmium, silver. Enthone, Inc., 442 Elm St., New Haven 11, Conn.

140. Black Finish
Folder tells about a simple process for applying a black finish on steel, gives step-by-step instructions for obtaining best results. Du-Lite Chemical Corporation, Middletown, Conn.

150. Planning Folder
Planning folder contains information on power-and-free overhead conveyors. Includes planning grid plus an explanatory diagram of one conveyor system. Chainveyor Corp., 5618 E. Washington Blvd., Los Angeles 22, Calif.

151. Purifying Zinc Plating Solutions
Literature on Zinc-Brite, a material for purifying zinc plating solutions. An aqueous solution, this material has an affinity for heavy impurities that enter zinc plating solutions. Sulphur Products Co., Inc., 621 W. Pittsburgh St., Greensburg, Pa.

152. Multi-Barrel Tumbling
BMT Multi-Barrel Slide-Honing permits tumble finishing of many different parts on the same machine without mixing. Brochure gives details. BMT Manufacturing Corp., 110 E. 9th St., Elmira Heights, N. Y.

153. Rapid-Dry Enamel
Product Information Bulletin No. 101 includes a complete table of air-drying and baking times on machinery and equipment applications. Also contains an outline of application methods, as well as information on appearance, weather and chemical resistance, salt-spray test results and so on. Body Bros., Inc., 214 Northfield Rd., Bedford, Ohio.

154. Barrel Finishing Equipment
Data sheet describes new features of 3000 Series Burr-Rite Senior barrel finishing machine. Globe Barrel Finishing Equipment Div., Casalbi Co., 546 Wayne St., Jackson, Mich.

155. Small Degreasers
Data sheet gives specifications for compact Baronet Vapor Spray Model SBD, which comes equipped with motor, starting switch, spray pumps, and manual lance assembly. Baron Industries, 241 W. Avenue 26, Los Angeles 31, Calif.

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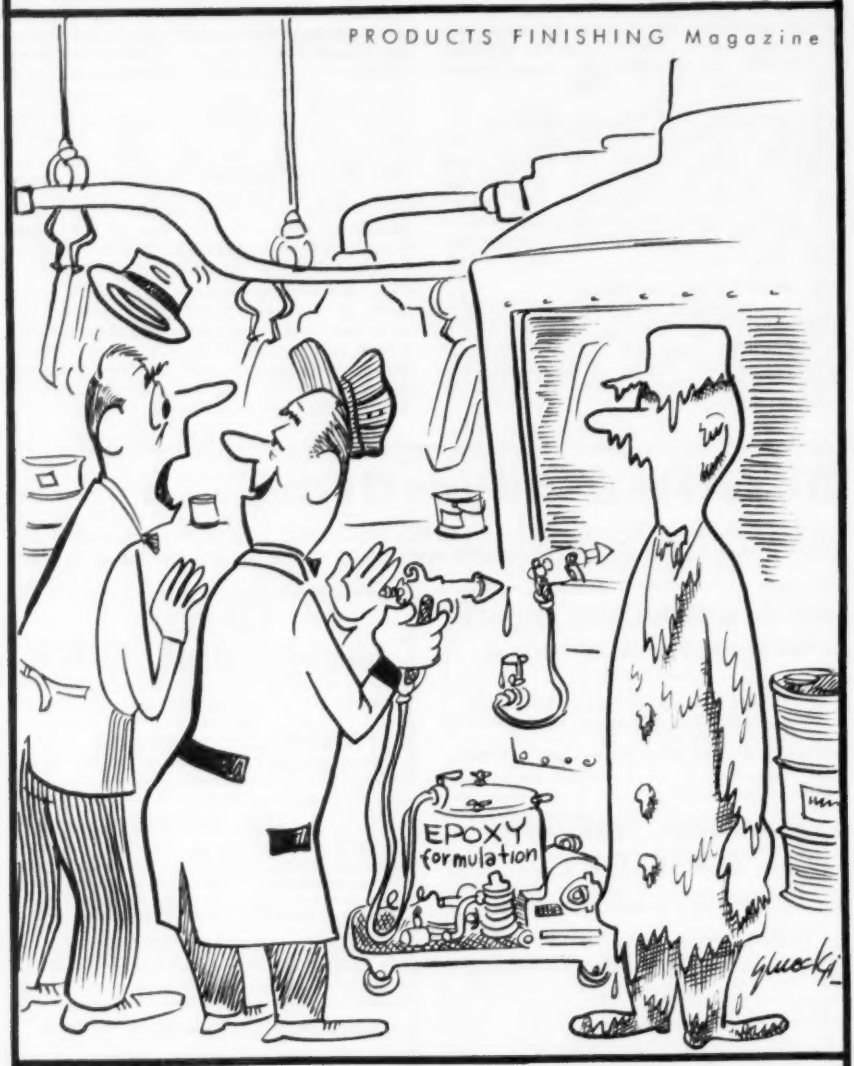

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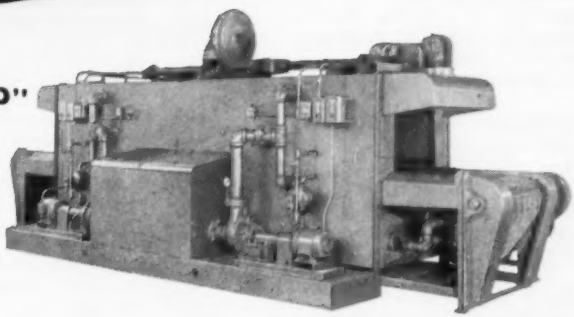

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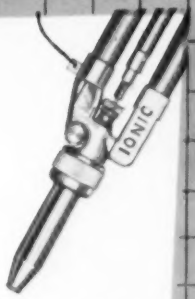

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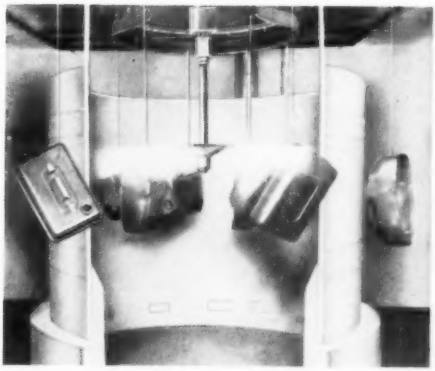

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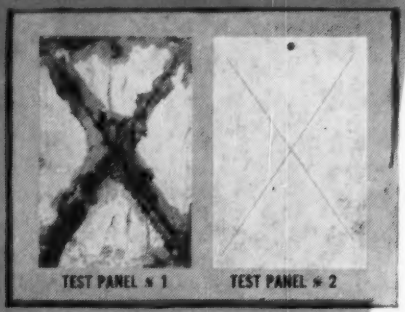

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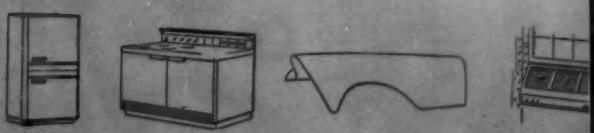

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